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ROOT DISEASE OF PARA RUBBER CAUSED BY SPHAEROSTILBE REPENS.

BY F. T. BROOKS.

During 1914 several rubber trees have been seen to be affected by the fungus *Sphaerostilbe repens* which attacks the root system and advances thence into the lower part of the trunk of the tree. The only previous record of this disease on rubber in Malaya was made earlier in the year by Mr R. M. Richards, Mycologist to the Malay Peninsula Agricultural Association, who mentions it in his report for 1912-13. In the experience of the present writer this disease is by no means rare in older rubber planted in lowlying situations in this country; it has been found in Northern Perak, in the district around Teluk Anson, and in the coast lands of Selangor. The disease was first found on rubber estates in Ceylon in 1907 by Petch who states that it is not there confined to the low country.

The foliage of rubber trees affected by *Sphaerostilbe repens* becomes thin and the branches gradually die back. The progress of the fungus being slow, a considerable time may elapse before all the lateral roots are affected and the tree succumbs. If the roots of a tree affected by *Sphaerostilbe repens* are examined, the disease can be readily distinguished from the troubles caused by *Fomes semitostus* and by *Hymenochaete noxia* on account of the absence of external mycelium and by the presence of characteristic mycelial strands or rhizomorphs between the bark and the wood. These strands are flat and about $\frac{1}{8}$ inch across and vary in colour according to age from grey to dark brown or black; they spread irregularly between the bark and the wood and sometimes in the bark itself. Even when the rhizomorphs have decayed their former position is indicated by the presence of corresponding dark lines on the surface of the wood I have not yet observed any tendency for these strands to spread independently through the soil after the manner of the mycelium

of *Fomes semitostus*. The affected trees seen hitherto have not usually been contiguous to one another. The finer mycelium of *Sphaerostilbe repens* permeates all parts of the bark and wood of the affected roots, the bark often assuming a bluish purple colour when cut open and the wood becoming discoloured on account of the accumulation in its cells of products of disorganisation which are brown in colour. The fungus advances along the lateral roots or up the tap root to the collar of the tree. On three occasions I have observed it making considerable progress up the trunk, especially in the wood, and in these cases boring beetles had begun to penetrate the diseased tissues. The shot-hole borer usually attacks portions of rubber trees which have been previously injured by some fungus; sometimes the region attacked is obviously not affected by a fungus advancing from the root system but in these specimens there was clearly a connection between the attack of the borers and the advance of *Sphaerostilbe repens* upwards from the root system. On three estates the affected trees were magnificent specimens 15 to 20 years of age but on another estate the diseased trees were only just coming into the tapping round.

The fructifications of *Sphaerostilbe repens* are of two kinds, both minute in size. The first form to appear is the conidial stage which consists of white or pinkish white blobs about the size of a pin's head borne at the ends of pink stalks which are about $\frac{1}{8}$ inch long and are hairy when young. This is the *Stilbum* stage and it arises from portions of the host permeated by the fungus or directly from the rhizomorphs; the conidial fructifications have also been seen on clayey soil lying in contact with a diseased root. On more than one occasion these reproductive bodies have been found below the surface of the ground. The spores of the *Stilbum* type of fructification which are formed at the extremities of the blobs spoken of above are hyaline, oval in shape, and 10-20 microns × 5-9 microns in size. Another *Stilbum* is an exceedingly common saprophyte on dead portions of rubber trees. This is *Stilbum cinnabarinum* the conidial stage of *Megalonectria pseudotrichia;* it is readily distinguished by its red colour and smaller size from the conidial stage of *Sphaerostilbe repens*. After the formation of conidia the fungus sometimes produces small dark red perithecia within which ascospores are formed. I have found the conidial stage more frequently than perithecia; the latter are by no means always produced when diseased tissues bearing the conidial stage are left exposed for a considerable time.

Sphaerostilbe repens sometimes lives solely as a saprophyte on various dead plant tissues and doubt has been expressed whether it is really parasitic on the root system of *Hevea*. In the rubber

trees affected by it which I have been able to examine it was undoubtedly advancing into living tissues and therefore acting as a parasite. The actual means by which infection of the roots is effected by this fungus are unknown. In certain cases some of the roots may already have been injured by adverse conditions such as bad drainage and if the fungus entered such roots it might easily pass thence into healthy tissues.

Pure cultures of this fungus can be easily established by sowing the conidia upon sterilised blocks of *Hevea* wood or upon potato agar. A white mycelium rapidly develops which assumes first a pink and then a brownish tinge. After a time sessile aggregations of spores of a yellowish pink colour arise on both media and these are often arranged in concentric zones. These spores are hyaline, oval, and very variable in size, the average limits being 16-20 microns × 6-8 microns though some are much smaller. Spherical thick-walled resting cells 9-10 microns in diameter are formed in the hyphae and at the ends of short branches; these resting spores are brown in colour when mature. On blocks of *Hevea* wood stalked conidial fructifications often arise similar to those which occur naturally. The mycelium penetrates the middle of these wood blocks being specially abundant in the vessels and medullary rays. Hitherto there has been no sign of the formation of perithecia in these cultures.

Inoculations of the roots of seedling rubber plants in pots and of 4 year old rubber trees growing on hilly land with pure culture material of the fungus have been made. In some cases the roots were wounded, in others the block of wood bearing the mycelium or the culture on agar was placed against uninjured tissues. After an interval of nearly five months none of these plants (16 in all) shew signs of infection. This negative result points to the possibility that some, at present unknown, condition which disposes to susceptibility must exist before the fungus can invade the roots of a rubber tree. In certain cases bad aeration of the soil consequent on deficient drainage may induce the requisite condition which enables the fungus to enter.

Rubber trees affected by this fungus should be cut out and burnt. The attack is usually far advanced before the tree is seen to be diseased hence it is generally not worth while to try to save the tree by excision of the affected parts. There is yet no evidence that the fungus spreads by means of subterranean strands but neighbouring trees should be examined and in order to be on the safe side a trench should be dug around the affected tree at such a distance as to preclude the possibility of underground infection. If it is intended to replant the affected area after an interval, the soil

should be deeply changkolled, all timber removed, and a liberal dressing of lime applied. This disease spreads more slowly than *Fomes Semitostus* and though it is at present not abundant in this country it is probable that the loss of some of the old rubber trees attributed to *Fomes* should have been properly placed to the account of *Sphaerostilbe repens*.

NOTE ON THE OCCURRENCE OF THREE CATERPILLAR PESTS ON COCONUTS.

BY P. B. RICHARDS.

In June of this year a caterpillar pest was reported to be damaging coconut palms on an estate on the West Coast. A visit to the estate showed that the attack was of considerable importance. Experiments were made in control methods which, it is hoped, will be the foundation for more extended work. The results so far obtained are not final, but they indicate very clearly the value of spraying with an insoluble arsenic compound. As a similar attack may occur on any coconut plantation in the Peninsula, it is thought advisable to publish a brief account of the pest at once.

The caterpillars causing the damage are the larvae of skipper butterflies. Chrysalids collected by Mr. Norris, and larvae which were fed in the laboratory of the Department, produced three species of butterflies belonging to the family Hesperiidae, which were identified by Mr. Holman Hunt as:—

Hidari irava.
Erionota thrax.
Corona palmarum.

The first two are widespread throughout the Malay Peninsula, feeding on wild palms. A sufficient number was not obtained to warrant an estimate of their relative proportion in the attack. Hidari irava has been previously recorded as a pest of coconuts in this country. (*Agric*: *Bulletin of F. M. S.* Vol. 1. No. 1. pp. 23-4, Vol. 1. No. 8. pp. 294-5.

The life history of none of the species has yet been worked out in detail. The main features are as follows:—

Eggs are laid on both upper and lower sides of the coconut palm fronds. The eggs are roughly hemispherical. The young larvae are elongate, green, naked, the head pale brown, the prothorax, just behind the head, compressed, giving the appearance of a neck. Older larvae have the head dark brown and the body greyish green with a slight mealyness over the whole surface. The pupa is

long, cylindrical, tapering to hind end. Pupation takes place in the folded leaf. The life history is short, probably from six to eight weeks.

The nature of the damage to coconut palms is characteristic. The larva connects together with stout silk adhesives the two edges of the underside of one pinna, or the underside of one to the top of the next, forming a tunnel in which it lives and feeds The caterpillar feeds towards the rachis, and the result of a bad attack is that the pinnae of each frond are stripped to the midrib, half way or more towards the rachis. No preference appears to be shown for young or old leaves, all being attacked. Young coconut palms of a few months are attacked equally with palms in bearing. Palms which have been badly attacked have a very ragged appearance.

The caterpillar, when feeding, devours the whole of the tissue of the leaf-segment which forms its tunnel, with the exception of the central supporting rib. It is evident, therefore, that if a poison be applied over the whole of the leaf, so that the caterpillar is compelled to eat the poison or to starve, the attack will be checked. The poison used must be insoluble and adhesive, to withstand tropical rain, and it must be innocuous to the foliage. These conditions are best met by lead arsenate. This substance can be obtained in a very fine state of division, in the form of a paste. When mixed with water, a uniform spray fluid is obtained, capable of being sprayed as a fine mist. A very small quantity suffices to kill the caterpillar, and the cost of the material is small.

To make the spray fluid 1½ lbs of lead arsenate paste, equivalent, roughly, to 1 lb of lead arsenate, is mixed with sixty gallons of water. Ten pounds of slaked lime may with advantage be added, as this increases the covering power of the mixture, and prevents any soluble arsenic which may be present from burning the foliage. Any sprayer with a nozzle giving a fine misty spray may be used for applying the poison. All the leaves should be sprayed as evenly and fully as possible, and spraying should cease as soon as any tendency to drip is observed. The dryer the day, the better for spraying. Once the spray has dried on to the leaf it is very adhesive, retaining its toxic properties for weeks notwithstanding subsequent rain.

Immediately an attack is observed, spraying should be commenced. If the young caterpillars are dealt with immediately after hatching, all the foliage will be saved. Delayed treatment results in loss of leaf area, and may allow the caterpillar time to have fed sufficiently to be able to pupate instead of feeding further upon the poisoned foliage.

The quantity of spray fluid required and the nature of the spraying machine depend upon the size of the attacked palms. For palms up to about 7½ feet high, a knapsack sprayer with extended nozzle is efficient. Above this height, a manual or power pump is required. Young palms up to a year old require from four to eight gallons of spray fluid per hundred palms. Full grown coconut palms require nearly half a gallon per palm.

Lead arsenate paste containing 60% lead arsenate, should be obtainable in quantity at about forty cents a pound.

If the caterpillars are fully grown before work is commenced, it is useless to spray until the next generation. A very small proportion only would be affected by the poison, the majority refusing to feed, and ultimately pupating. Good work may then be done by collecting the pupae and placing them in a box, one side of which is replaced by wire netting of quarter inch mesh. A varying proportion of the larvae are always attacked by insect parasites which do not emerge until the caterpillar has pupated. These parasitic insects are always much smaller than the host butterfly. Butterflies and parasites emerge from the collected pupae. The parasites escape to continue their attack upon the pest, whereas the butterflies, unable to pass through the small mesh, remain in the box, and die.

The hatching box should be made inaccessible to ants, or the pupae will be destroyed before hatching.

THE ACIDITY OF MALAYAN SOILS.

BY M. BARROWCLIFF.

The deficiency in lime of the soils of most tropical countries has been noted and commented upon by everyone who has had occasion to make analyses of them. In Malaya it is found that peaty, clay, and sandy soils alike contain usually only .02 to .08%, whereas in England 1% is probably below rather than above the average.

The impossibility of gauging the actual need for lime of a given soil by determining the amount it already contains is, therefore, obvious, and until recently no satisfactory method existed for estimating even approximately the amount required to correct the acidity which biological investigations have shewn to be harmful to the development of those groups of bacteria which convert the nitrogen present in complex and insoluble constituents into a form in which the plant can assimilate it.

Quite recently* two American chemists, Bizzell and Lyon, described a process which seemed to have a rational basis, and the writer has applied it, with a slight modification, to the soils analysed of late. The method consists briefly in allowing a weighed quantity of the soil to remain for a definite time in contact with a very dilute standard solution of lime (to be precise, its equivalent, baryta). The amount not neutralised is then determined, from which the quantity absorbed by the soil is calculated and expressed in tons per acre, 1 ft. depth. (The full details are given at the end of this article.)

To indicate the degree of validity of the method as a means of comparison of soils of the same and different geological origin some observations made during a soil survey of a proposed irrigation area, between Raub and Benta in Pahang, may be given. The land in question lies near the centre of a broad valley bounded on the West by the main granite range of the Peninsula and on the East by the Benom range, the rocks of which have been shewn by the Government Geologist, Mr. J B. Scrivenor, to be composed of a granite much less acidic than the former. East of the Lipis Road from the 47th to the 50th mile, along the Gali River, is an area of some thousands of acres, known as Gali Plain. Three groups of samples taken here, at distances of 1½ miles apart, shewed a lime absorption capacity respectively of ·92, ·99, and ·90 tons per acre (3,000,000 lbs.) From the 50th mile the land examined constitutes a narrow strip between the Gali and Lipis Rivers and the road, reaching to the 62nd mile. At m. 50½ a small stream (S. Lampan) from the West joins the Gali. Soil taken just north of this had an acidity equivalent to 1.02 tons of lime. Northwards, as far as the 57th mile, a large number of streams from the Benom hills, including the River Dong, join the Gali. The following values were obtained at different places:—

52nd	mile	·38	tons line per acre
53½	,,	·55	,, ,, ,, ,,
55	,,	·58	,, ,, ,, ,,
56	,,	·36	,, ,, ,, ,,

At m. 57 is the junction of the Gali with the Lipis, which flows from the Western mountains. The figure given by the soil here was 1·01 tons. Near the 59th mile where another stream comes down from the East it fell to ·77 tons, whilst at the 61st-62nd mile, between which two more rivulets from the West join the main river a value of 1·56 tons was obtained. These soils are the least acidic of any yet encountered in this country and it was noted that

*Journal of Industrial and Engineering Chemistry, Dec. 1913.

the indigenous weed flora contained more leguminous plants than have been met with elsewhere, which is quite in accordance with European experience.

The close agreement in the figures given by soils formed by the same geologic influences, taken over extensive areas, as exemplified above, is very striking.

The method was also applied to some treated plots on Castleton Estate, Telok Anson.

Plot 1 had received 2 tons of powdered limestone per acre, equivalent to 1·12 tons of lime; plot 2 half a ton of quicklime; whilst plot 3 remained untreated. Both lime and limestone had been applied more than a year when the estimations were made.

The results obtained were as follows.

	"Lime requirement"	% age found of lime added.
Limestone	5·1 tons	71%
Lime	5·6 ,,	60%
Blank	5·9 ,,	—

The lime, it may be remarked, was not of good quality, and was partially slaked when received.

The soil on Castleton Estate, the analysis of which was published in a former paper, is very heavy, containing 50·4% clay and 31% fine silt.

The following figures were obtained for other representative soils :—

	"Lime Requirement."
Kuala Lumpur, Govt. Plantation	2·46 tons
Undulating land, Negri Sembilan	2·60 ,,
,, ,, ,, ,,	2·21 ,,
Flat land, Kajang	2·74 ,,
Carey Island	3·25 ,,
Klang district	4·74 ,,
,, ,, (peaty)	6·32 ,,
Krian (peaty)	5·49 ,,
Seremban	2·30 ,,
Rantau	3·20 ,,
Coast soil, Selangor	5·59 ,,
,, ,, ,,	4·06 ,,
Banting, Selangor	6·23 ,,
Jugra	6·42 ,,
,,	6·35 ,,
Telok Anson, peat.	14·20 ,,

It should be pointed out that the weight of the foot acre of soil is taken at an arbitrary figure of 3,000,000, an average for a clay

loam. Peaty soils would weigh considerably less and sandy soils more.

It is seen from these figures that inland undulating land has an acidity corresponding to 2-3 tons of lime per acre whilst the clays and peaty clays found near the West coast would require 5-6½ tons to produce neutrality.

The soils examined by the describers of the process, said to be clay loams and loams, gave results varying from ·25 ton to 3·35 tons, the average of 22 samples being 1·9. These figures however are somewhat higher than would be obtained by the present writer's modification of the process.

To what extent soil acidity influences growth little or no evidence is as yet available. The rubber trees on the Government Plantation, Kuala Lumpur, seem to benefit somewhat by liming but hardly to a sufficient extent for the process to be considered remunerative, if quick lime is used. On the other land in no experiment has sufficient lime to produce neutrality, even in the first foot of soil, been employed.

The magnitude of the figures obtained, especially for the clay soils, shews that liming treatment as hitherto advocated is totally inadequate. On one estate visited quicklime to the amount of ¼ ton per acre only was being applied, whereas the acidity when estimated proved to be equivalent to over 6 tons. At this rate probably 20 years, assuming an annual application, would be taken to reduce the acidity only to that of an average hill soil!

It is clear too that, in most cases, to produce even approximate neutrality by means of quicklime at $17 per ton would be prohibitively expensive. With powdered limestone however, obtainable, exclusive of freight, at $1.50 per ton, equivalent to $2.70 per ton for the lime therein contained, it is quite feasible.

The figures given above for the Castleton Estate soils shew plainly the efficiency of limestone as a neutralising agent, and its employment in preference to lime can be unhesitatingly recommended.

Nothing is known as to what degree of acidity it is desirable to reduce the soil to for Hevea cultivation and the writer would be greatly obliged to any planter who is certain that liming has been beneficial, or equally certain that it has not, for permission to examine the soil in question.

In the case of the coconut tree indeed it seems extremely doubtful whether liming is required at all. In the course of a recent examination of a number of soils from the Jugra district it was noticed that the acidity of those from the more productive fields was almost invariably higher than those from the less. Other factors

however have to be taken into account and a closer investigation is required. The soils on which the very best coconut growth in the country is obtained have an acidity equivalent approximately to 6 tons of lime per foot-acre, from which it would appear that any recommendation to lime a coconut proposition should be made with caution.

Method of Estimation.

Twenty five grams of the air dried soil are treated in a litre flask with 100 cubic centimetres of one-twentieth-normal baryta solution. The flask is tightly stoppered and allowed to stand with occasional shaking, at ordinary temperatures, for one hour. Twenty five cubic centimetres of a 20 percent. solution of ammonium chloride are then added and the ammonia, which is liberated from the unchanged baryta, distilled over in steam, absorbed in deci-normal acid and estimated by titration.

As however ammonium chloride itself when steam distilled invariably decomposes, giving off a small quantity of ammonia, it is necessary to perform a "blank" experiment. This is done by distilling together in the same way and for the same length of time 25 grams of the soil, 100 cubic centimetres of water and 25 cubic centimetres of the ammonium chloride solution, and titrating the ammonia evolved. From the resulting titrations the amount of baryta neutralised by the soil is found and its lime equivalent calculated.

In the original process the soil was heated for an hour with the baryta solution. This seemed open to the objection that decomposition particularly of humus and protein compounds, such as would not occur under natural conditions might be brought about, so the method was modified as above.

Addendum:—Since the above was written there has been received a paper by Hutchison and MacLennan entitled 'The Relative Effect of Lime as Oxide and Carbonate on certain Soils.'* The authors demonstrate experimentally that caustic lime has two distinct effects on the soil:

1. A partial sterilisation effect.
2. A chemical action, decomposing some of the organic matter.

Calcium carbonate (limestone) on the other hand is in these respects relatively inactive.

"The amount of caustic lime necessary to induce specific changes in the flora and fauna of a soil depends very largely on the character of the soil. The light sandy Millbrook soil, poor in organic

* Journal of Agricultural Science VI p. 304. Sept. 1914.

matter and in carbonate, reacted sharply with 0·2 to 0·3 per cent. caustic lime (2½ *to* 4 *tons per acre*); the Rothamsted clay soil, poor in organic matter but rich in carbonate, was found to react to 0·3 to 0·4 per cent. (4-5¼ *tons*); the acid Woburn soil required an amount between 0·5 and 1·0 per cent. (5¼ *to* 13¼ *tons*), as did also the rich Chelsea garden soil, which already contained carbonate; the Craibstone soil, with a high organic and a low carbonate content, failed to react even to application of 1·0 per cent. caustic lime. Each of these soils, as well as many others examined, appears to absorb directly a definite amount of caustic lime, and until these requirements are fully satisfied the partial sterilisation phenomena do not set in."

Considering the acidity and the extremely low lime content of the majority of Malayan soils it seems legitimate to assume from the above that application to them of ordinary quantities of caustic lime will be unattended by specific beneficial effect, and that it may be expected to have merely a neutralising action on the acidic constituents.

This should be producible at a greatly reduced cost and probably with equal efficacy by using limestone, after which liming with small quantities of caustic lime should prove as effective as general agricultural experience has shewn it to be.

An experiment designed to test the validity of this reasoning and to determine whether such treatment can be profitably applied to rubber will be started forthwith by the Department, though two or three years may elapse perhaps before a definite decision can be arrived at.

REPORT ON THE MALAYAN SECTION OF THE INTERNATIONAL RUBBER EXHIBITION, LONDON, 1914.

Sir William Taylor in forwarding the full report by Mr. Wray states that all the arrangements for representation at the Exhibition were undertaken and very successfully carried out by Mr. F. J. B. Dykes and Mr. Leonard Wray, I. S. O.

Mr. Wray was in charge of the Section and was in constant attendance at the Exhibition during the time that it remained open, and his interesting Report deals fully with all the points. His services were ungrudgingly given to the work and, as on previous occasions, were much appreciated and of the utmost value owing to his experience and acquaintance with the subject. Mr. Dykes also gave much time to supervision of the arrangements.

The Malayan Stand occupied a prominent position and owing to the large area over which it extended there was plenty of room for display of the large and important Exhibits.

The Stand was very suitable for the purpose for which it was designed and the Exhibits were arranged on it by Mr. Wray in a manner that showed them to the best advantage.

A gold medal was awarded by the Rubber Growers' Association to the Government of the Federated Malay States for the Exhibits contained in the Malayan Section.

At the close of the Exhibition the samples shown were returned to the Exhibitors, or their representatives, or where this was not desired, were disposed of by auction at the regular Rubber Auction Sales by Messrs Lewis and Peat. The proceeds of these Sales are now being distributed to those entitled to receive them.

As at previous Exhibitions most of the prizes given in connection with the Competitions instituted by the Rubber Growers' Association went to Malayan Estates and Companies. They secured three Gold medals, two Silver medals, two Bronze medals and eight "Highly Commended," in the three classes in which the competition took place. The successful competitors were :—

Highlands and Lowlands Para Rubber Co., Ltd. two gold medals
Balgownie Rubber Estates, Ltd. Gold medal
Inch Kenneth Rubber Estates, Ltd. Silver medal
Seafield Rubber Company, Ltd, Silver medal
Jugra Land and Rubber Estates, Ltd, Bronze medal
Pataling Rubber Estates Syndicate, Ltd, Bronze medal
Carey United Rubber Company, Ltd, Highly Commended
Pataling Rubber Estates Syndicate, Ltd, Highly Commended
Trong Rubber Estates, Ltd. do.
Labu (F.M.S.) Rubber Company, Ltd. do.
Chersonese (F.M.S.) Estates, Ltd. do.
Selangor River Rubber Estate Co., Ltd. do.
Balgownie Rubber Estates, Ltd. do.
Lauderdale Estate do.

Sir William Taylor adds that the display of Rubber was quite representative and worthy of the important place which the Rubber growing industry occupies in the Federated Malay States and the Malay Peninsula generally.

Mr. L. Wray's Report.

The Fourth International Rubber and Allied Industries Exhibition was held in the Royal Agricultural Hall, London. The Press day was fixed for June 23rd, and the Exhibition was formally opened by His Royal Highness Prince Arthur of Connaught, at 3 p.m. on the 24th of June, and remained open until the night of July 9th.

The British Malayan section was favourably situated in the large Hall, near the main entrance, and consisted of two contiguous blocks, one measuring 40 ft. by 67 ft. and the other 36 ft. by 33 ft. giving a total area of 3,868 square feet. In addition, Mr. A. Staines Manders gave one bay in the Gallery for the accommodation of any exhibits which could not be found room for on the ground floor. The Stand was built by Messrs Piggott Brothers from plans prepared by them, embodying as many of the architectural features as possible from the beautiful design of Mr. A. B. Hubback. The two blocks were treated as one area. The larger of the two was devoted entirely to rubber, while the lesser, in addition to a small amount of rubber, contained the other Malayan produce.

On the counter and screen along one side of the stand were arranged the exhibits forming the Index Collection. These comprised photographs, botanical specimens, diagrams and specimens arranged as far as possible to form a connected series explanatory of the history, cultivation and manufacture of rubber. There were considerably over 248 separate objects in the collection, and thanks to Mr. B. J. Eaton, Chemist to the Agricultural Department, it was possible to show in an effective manner the methods of preparation of sheet, crepe and scrap rubbers, from the latex to the finished articles. Most of the other specimens were sent by Mr. Lewton-Brain, the Director of Agriculture. A very beautiful model of the buildings on Castleton Estate, Perak, made by Messrs Hendry Brothers, Ltd, Glasgow, from designs by Mr. A. H. Alston; three tree trunks showing methods of tapping, sent by the Agricultural Department; 50 young Hevea plants raised from seed at the Royal Gardens, Kew, and two three year old trees grown in an English hot-house, and kindly lent by Mr. R. Hoffmann, were shown on other parts of the stand.

The commercial samples of rubber were staged on counters surrounding the space and on a large central H-shaped, stepped stand measuring 36 ft. by 20 ft. Ninety Companies and Estates sent in between them about 250 samples of rubber. The States of the Federation were very well represented, while thirteen Estates in the Straits Settlements, Johore and Kedah contributed some 45 samples. The rubber was arranged, as at the Exhibitions of 1911 and 1912, by grades, commencing with smoked sheet and terminating with earth scrap. A catalogue was prepared so as to enable visitors to find the produce of any particular estate or company. Most of the samples were of about 100 lbs but some weighed as much as 200 lbs per case, and instances of two or more cases of one sort were frequent. Three bulk samples were staged by themselves, one of 750 lbs of No. 1 Crepe from Castleton, the Government Estate in

Perak; one of 1,000 lbs of smoked sheet from Highlands and Lowlands Estate, in Selangor, and a fine pyramid of Lanadron Block containing 1900 lbs from Johore.

The state in which the rubber arrived was distinctly good, mould being practically absent from all the samples, but while the general standard was high, no material advance can be recorded in the quality or method of preparation over that sent to New York in 1912. Up to then a very noticeable improvement was apparent at each successive exhibition, and it is unlikely that no further progress is possible in the product of such a very new industry. Sheet was quite unrepresented in the commercial section. In this connection, it should be mentioned that several prominent manufacturers expressed the opinion that sheet rubber was for their purposes preferable to smoked sheet, being lighter in colour, containing less resin and losing a smaller percentage on rewashing. On the other hand, it is cheaper to prepare on the estates, and since the introduction of ribbing should not suffer from mould as it used to do on the voyage. Almost all the smoked sheet was ribbed, and a few estates had their names stamped on the rubber. It varied much in colour, ranging from pale yellowish brown to almost black.

The samples of smoked sheet and crepe were about equally numerous. There was very considerable variation in the colour of the pale crepes. This matter of colour is apparently of importance in the valuation of this grade of rubber. The prizes in the Rubber Growers' Association competition were all given to nearly colourless samples, while a manufacturer said he bought crepe because of its absence of colour and that he did not see the use of making crepe unless it could be made quite pale. Very little blanket crepe was shown and only one sample of what is known as gristly crepe, a form which is so much in favour in Ceylon, was exhibited.

There were but two examples of smoked crepe, which indicates how much this mode of preparation has gone out of fashion. Worm rubber, which has not previously been sent for exhibition from Malaya, was represented by one large sample. This grade appears to have declined in popularity in Ceylon, judging by the scarcity of exhibits on the present occasion. Block was only exhibited by two estates, and as at the three previous exhibitions Lanadron block excited much interest and fully maintained its character for uniformity and general excellence. The lower grades of rubber were very well represented by a large series of specimens, none of which were smoked. The multiplicity of names given by Estate Managers to the various grades of rubber, more particularly to the lower qualities, is rather confusing, and appears to be quite unnecessary.

The packing was unsatisfactory, the samples being in this respect worse than those sent to the New York Exhibition. Many had been put into cases much too large for them, with the result that the rubber turned out as a crumpled, ugly mass. Others had been put into cases too small for them, so that either the ends were turned up or over-lapping in the centre of the boxes had occurred, leading to much waste of space and an unsatisfactory looking sample. In fact, examples of all the possible faults which could be made in the packing of rubber, and they are many, were to be seen on the Malayan Stand. Probably about one quarter of the samples were well packed, half indifferently packed and one quarter very badly packed. The Ceylon rubber was in striking contrast to that of British Malaya in this respect, for evidently the greatest care had been taken in packing it. It had been folded so as to fit the boxes, or the boxes made to fit it, and the contents, therefore, turned out as symmetrical blocks. To give an idea of the care that had been taken, it may be mentioned that some of the crepes were actually rolled in long strips of cloth. There is little doubt that Ceylon only tied with Malaya, in the competition for the best exhibit of plantation rubber, in consequence of the better state in which its samples arrived in England. For exhibition purposes the importance of careful packing cannot be over estimated. It is also of value in the case of rubber intended for the sale room, for the nice looking sample sells better than an unsightly one. On this subject a great authority, Mr. A. Johnson, the General Manager of the North British Rubber Company, the largest Rubber factory in England, said in a speech delivered at the time of the Exhibition and reported in "The Rubber World" that "Another point that is worth the attention of planters is that owing to pure carelessness in packing, their shipments are assessed as inferior quality by the Market and fetch 1½d or 2d. a lb. under standard."

No advance appears to have been made in the direction of adapting the dimensions of the packing cases to the size of the sheet or crepe, as the case may be, which is to be packed in them. When this is disregarded, in addition to the rubber arriving in an unsatisfactory condition much space is wasted and as freight on rubber is so high this should be a matter deserving the consideration of Managers and Directors of Companies, particularly as the packing case bill is also longer than it need be. It is certainly no exaggeration to say that the well-packed cases which were sent to the Exhibition contained quite 25 per cent more rubber than the badly-packed ones of the same size. The best proportions appear to be either that the width of the rubber should be equal to that of the inside of the case or half the width. In the case of crepe, the best

results were obtained by making the individual bundles small and equal in length to the width of the case, the crepe itself being half the width, and then packing each alternate layer at right angles to the one beneath it. No space was wasted and the rubber turned out as a compact, well-knit block, which, however, could readily be split up into its component parts, as there being no overlapping in the centre, the pressure had been equally distributed and adhesions between the bundles had not taken place nor had ugly pressure marks been formed. Some of the cases of sheet packed in the same manner were also very satisfactory, as were some where the sheets equalled the width of the packing case and the length once, twice or more times that of the case. It was curious that the rubber sent from Malaya to the competitions was much better packed than that sent for exhibition on the Malayan stand.

In the smaller portion of the stand, besides a few samples of earth scrap rubber, were shown a collection of models of Malayan fruits and vegetables, coconuts and coconut products, various foodstuffs, pickles and preserves, spices, oils, drugs, scents, dyes, gutta-percha, mat and basket work, fibres and rattans. Some fine examples of Malayan fabrics from Trengganu filled two glass cases, and two others held a collection of White metal from Trengganu and Chinese tin-ware from Negri Sembilan. The mining industry was represented by a number of large samples of tin-ore and a pile of ingots of metallic tin from the Eastern Smelting Works, Penang. On the screen and on the walls of the Office were hung many photographs and botanical specimens arranged as far as possible in association with the other exhibits. Maps and plans, railway posters. and statistics were also shown. In King George's Hall were exhibited at frequent intervals three cinematograph films—one of the Rubber Industry in Malaya, one of a Regatta in Singapore and a third of Felling and Burning Jungle. In the same place was also shown a film taken in the works of the North British Rubber Company.

The booklets issued by the Malay States Information Agency were either rewritten or revised and brought up to date for the Exhibition, and 16,550 copies were distributed during the time it was open. They were as follows:—

Rubber Planting in Malaya	...	3,800
British Malaya (Trade and Commerce)		3,300
Coconut Industry in Malaya	...	3,200
Mining in Malaya	...	3,200
Sport and Motoring in Malaya	...	3,050
	Total	16,550

Mr. E. G. Broadrick was appointed Official Delegate to the Exhibition by the Government of the Federated Malay States, while Messrs H. E. G. Solbé and H. M. Darby were the Delegates representing the Planters' Association of Malaya.

Mr. Darby was, unfortunately, unable, in consequence of ill-health, to be present at the Exhibition as much as he would have liked, but Mr. Solbé devoted a great deal of time to the fulfilment of his duties, and was able to afford much valuable technical information to many visitors, besides looking after the interests of his Association. Mr. Cyril Baxendale also was present almost daily in the Malayan section, and did his share of work in support of the welfare of the Planting Community of Malaya.

On the 26th of June, a very successful Reception was held, when probably the largest gathering of Federated Malay States and Straits Settlements people ever got together in England was entertained. The guests, who were received by Sir Edward and Lady Brockman, numbered about 260.

Rubber was exhibited on many of the stands of widely separate countries, though it was apparent that there is not as much activity in the wild product as heretofore, except in the better grades.

Brazil, as on former occasions, had a very fine exhibit of rubber. There were four sections, namely, the Federal Government of Brazil and the States of Amazonas, Para and Sao Paulo. The bulk of the rubber was in the well-known large balls, but several other forms were also shown, prepared by newer methods, of which that made by the "Mendes" process may be mentioned. It is smoke coagulated on the outside of a revolving drum and is in the form of thick sheets. It seemed at the last London Exhibition in 1911 that as plantation rubber then fetched on an average 5½d. a pound more than hard Para, it was only a question of increasing the output of the plantation product practically to drive Brazilian rubber out of the market. Since then, however, the position has been reversed, and although the supply from the Middle East has enormously increased, the standard quality of hard Para, has enabled Brazil to maintain its place as a great rubber producing country. Those who at that time foresaw the trend of events, and endeavoured to initiate a scientific investigation into the causes of the variability of plantation rubber, have been proved to have taken a correct view of the situation.

Ceylon, whose stand was next to Malaya, had a good show of rubber, confined, however, almost entirely to the higher grades. Every care had been bestowed on the selection and packing of the samples, with the result that there was not a single unsightly exhibit on the stand. Particularly fine were the gristly crepes,

while the collection of rubbers prepared by various new processes was a very interesting feature. Other products were well represented.

Kelantan had a small stand to itself, and there was some very good rubber shown on it. Mount Austin (Johore) Rubber Estates, Ltd., also had a stand on which, in addition to rubber, there was a well-made scale model of the estate. Several of the London Agents had stands and exhibited the product of many Malayan Estates on them. Among these may be mentioned Messrs. Bright and Galbraith Ltd. Messrs Dickson & Co. Messrs Harrisons and Crosfield Ltd., the Rubber Estate Agency, and the Straits Rubber Co., Ltd., and Allied Companies.

Rubber Manufacturers were particularly well represented, and innumerable appliances of rubber to all imaginable purposes were to be seen on their stands, from imitation polished serpentine, granite and marble, which could not be differentiated from the real things by sight or touch, to sham bones for the use of young puppies. The North British Rubber Co., Ltd. the Northern Rubber Co., the Harburg and Vienna India-Rubber Works, the Dunlop Rubber Co., Ltd , the Leyland and Birmingham Rubber Co., Ltd., and Messrs Pirelli, Ltd., amongst others had most interesting collections of manufactured goods, while Mr. Staines Manders had, in the Gallery, a large exhibit of articles made of rubber.

Several new processes for preparing rubber from the latex were shown, of which the most interesting appeared to be the following :—

The Pinto Process. This consists in coagulating the rubber by a fluid which is stated not to contain any acid.

The reagent, though colourless, suggests by its smell that it is derived from the destructive distillation of wood. It appears to have much the same effect on the rubber as the application of smoke in the Brazilian method. Sheet rubber produced by it darkens externally by exposure to the air, while the central portions remain white. Unless it can be proved that the rubber made by this process will fetch more than that by the acetic acid one, it is doubtful whether it would commend itself to any Estate Manager, as presumably a royalty has to be paid for the use of it.

The Byrne Process is a method of fuming the rubber after coagulating and sheeting in the ordinary manner and is said to produce a product of great uniformity and to take only five days from placing the wet sheets in the fuming chambers to the time when they may be packed for export. The fumes are produced by vaporising a fluid derived from the destructive distillation of wood. The finished product contains much moisture but is stated not to be subject to mould, owing to the antiseptic nature of the fumes. It is quite un-

like smoked sheet in character and appearance. It is reported that Messrs Dunlop have adopted this process on their Estates, so apparently the rubber is of a quality that the manufacturer likes.

The Wickham Process invented by the man who procured the seed from the plantations of the Middle East have all sprung, consists of smoke coagulation on the inside of a drum. The latex is fed on to the inner surface of a revolving cylinder, the film thus formed is coagulated by a stream of smoke which is made to impinge on to it. The rubber band, built up of successive layers, is stripped off when of sufficient thickness, folded up and consolidated into a block in screw press.

The Agar Process on the other hand, employs the outside of a revolving cylinder, working in a smoke chamber, as the coagulating surface. The latex is fed into the bottom of the chamber which forms a trough for the purpose of holding it.

The cylinder is provided with a number of longitudinal ribs, and must cause the latex to be splashed about unless it is driven at a very slow rate. The rubber is subsequently rolled up into cylindrical shaped blocks.

The Derry Process is also a smoke coagulation one, but the surface on which it is carried out is a travelling band passing through a smoke chamber and which picks up the latex from a trough situated outside it. When a sufficient thickness of rubber is formed on the band, it is cut across, stripped off and afterwards made up into a roll. On the Malay stand was shown some recently prepared Derry Rubber, and also some which was sent to the New York Exhibition in 1912 and which is still in first-rate condition. Some improvements have recently been made in this apparatus which are stated materially to increase its output.

The rubber produced by these three processes is practically the same, and is of the Para hard-cure type. Whether any of them in their present state of development can be used to deal with the output of a large estate has yet to be proved.

The problem to be solved is the rapid coagulation of large quantities of latex, so as to avoid the formation of an undue amount of No. 2 grade rubber, which must occur with any slow working process. I venture to think that none of the smoke coagulating appliances shown at the Exhibition comply with this important requirement. One or two other smoke-cured rubbers were to be seen on the Ceylon stand, but no details of the process by which they were prepared were available. In the leaflets issued by the introducers of these various processes no comparative tests are given as to the effect the particular one has on the quality and characteristics of the rubber produced by it. This is most regrettable, as it

discourages that investigation by the planting community, into the merits of all suggested improvements which is so necessary in the interests of the industry. It would be fatal to any hope of further progress if the present methods were to be looked upon as final and incapable of improvement, and until such times as plantation rubber can be raised to the level of fine hard Para and command the same price, rubber for rubber, there is no excuse for the complacency which is unfortunately noticeable in some Planters.

Standardization is apparently as far off as ever, no indications of it being visible anywhere in the Exhibition, while the complaints of the manufacturers as to the unreliable character of plantation rubber were as numerous as heretofore.

This dissatisfaction takes the very unpleasant form of inducing them to pay 8d. to 10d. per pound more for fine hard than the price ruling for No. 1 crepe or smoked sheet. It must also be remembered that, rubber for rubber, this difference in price is considerably more than it appears to be, for fine hard contains some 20 per cent of water and impurities, consequently five pounds only yields four pounds of washed and dried rubber ready for the mixing mill, while the loss on plantation is quite negligible. Standardization is now, as it was three years ago, the most important problem for the producer of plantation rubber to solve.

It was very evident that the Manufacturer is keenly interested in plantation rubber, but it is its low price and not its quality which attracts him. This is not, perhaps, a flattering statement to have to make, but it is undoubtedly a fact and is deserving of the earnest consideration of planters. Several Manufacturers who now exclusively use fine hard for special purpose were anxious to know if it were possible to use plantation in place of it, so as to bring down their costs of production. To this question, in the present state of development, no answer satisfactory to the planting industry can be given.

One such Manufacturer who uses many tons of rubber per annum said he had tried all varities of first grade plantation, both alone and in association with fine hard, without success. In his particular line, it is absolutely necessary that with standard mixings and standard vulcanization the results should be uniform.

There was some talk of the proposal which was first mooted at the New York Exhibition, and has since been taken up by the Rubber Growers' Association, of selling rubber on specification; but this method, although there is much to be said in favour of it, has nothing to do with standardization. If introduced, it would doubtless lead to a levelling up of quality, as Directors and Shareholders of Companies which turned out unsatisfactory rubber would want

to know the cause or causes of the inferiority. Besides improving the quality, it would also extend the demand, for it would enable the small Manufacturer, who works mostly by rule-of-thumb and does not employ a trained chemist to test each mixing, to use plantation rubber with some degree of confidence.

As at the London Exhibition of 1911, there was an exhibit of Synthetic rubber, but, unlike that occasion, no details of how it was produced were forthcoming. It is called "Pavea," and is reported to be made from the stalks of the artichoke, by a secret process, while it had the appearance of rewashed rubber of good quality and smelt of acetate of amyl. In the pamphlet issued by the introducers, it is reported to contain a sugar which "has hitherto only been identified in the rubber obtained from Hevea species, and its occurrence in Synthetic Rubber is indeed remarkable." Referring to the resin content, it is stated: "the acetone extract is in appearance and extent very much akin to a normal extract of hard fine, containing about the same amount of crystalline resins and possessing a faint creosote smell." Although it was stated that 600 acres of artichokes were being planted in county Tipperary and that works had been acquired near Manchester there does not appear, after consideration of the above quoted extracts, to be any immediate necessity for abandoning the rubber plantations in British Malaya.

An exhibit that was of interest to Planters, particularly those who have difficulty in drying their rubber, was the "Chula" drying apparatus. It appears to be a practical one, and depends on the desiccating effect of a current of heated air which is forced through the drying chambers by means of a fan. Provision is made for introducing into the chambers smoke or fumes along with the hot air, should this be required. The apparatus is also applicable for the preparation of copra from coconuts or the desiccation of other products. Near by were exhibited ice making and refrigerating machines by Messrs. Classen, Ltd., and although this exhibit may not at first sight appear to have any connection with drying rubber, still it suggests that system in which the air was dried by a refrigerator before admission to the drying chambers might possibly be a much better arrangement than that in which hot moist air is employed.

Very little rubber machinery was to be seen. Messrs. Summerscales, Ltd. exhibited washing, creping and macerating machines for making sheet and crepe rubbers, to be driven by power and also by hand, and the Harburger Eisen-und Bronzewerke had some washing machines and also a press for making block rubber.

A fine series of rubber testing apparatus was shown by Louis Schopper. These appliances do not now appear to have any interest

for the Planter, but if there is to be any real progress in the quality of plantation rubber they must form a part of the equipment of every well managed estate or group of estates. The Northern Polytechnic Institute also had an interesting exhibit of testing apparatus.

Messrs Ralph Martindale & Co., Ltd., had a large display of plantation and cultivation tools of every possible kind on their stand; including tapping knives, bill-hooks, axes, pickaxes, changkols, parangs and pruning knives.

Several firms exhibited packing cases for rubber. Some of them did not appear to have grasped the requirements of this particular branch of industry, so that their goods were of no interest to the Planter. The Venesta Company, on the other hand, were showing a case which is a great advance on anything hitherto put on the market. It is known as Pattern No. 210, and fulfils most of the requirements which were formulated in my report on the New York Exhibition. In these boxes, the body is built up as in former patterns, but the two ends have the battens nailed on to them in place of being nailed to the body. When put in place, the tin angle pieces are bent over and fastened to the top and bottom by staples. To open, it is only necessary to withdraw the staples with a suitable implement, bend back the tin and take off the lid. As the battens are attached to the lid and come away with it there is nothing to prevent the rubber from being turned out of the case, and, as no nails are used, no splinters are produced in opening the cases, which can be reclosed quickly and effectively. Only those who have had actual experience of opening and replacing rubber can form an adequate idea of the importance of these improvements. The same Firm were also showing a very strong parchment wrapping paper, to be used inside the cases, to protect the rubber from dust and the minute wood spicules which the vibration of steamers and trains appear to produce from the joints of even the best made packing cases. In the Belgian section were to be seen some "Rubbex" cases, the lids of which were fastened on with screw bolts. These cases are doubtless quite successful and must be much easier to handle than "Venesta" cases; but owing to the battens being outside the lid and bottom, in place of inside, there is a certain loss of capacity, equal to the thickness of the battens used. To open them it is only necessary to unscrew eight nuts, pull out the bolts and remove the lid and attached battens. Some of these cases were branded with the names of Malayan Estates, so presumably they are already in use in the F. M. S.

A very interesting collection of motor car tyres made of plantation rubber, which had been used on various cars, was ex-

hibited by the Rubber Growers' Association. Each tyre had a certificate attached to it giving the mileage run, the weight of car, name of owner and other details. This large collection should certainly discredit the oft repeated statement that good, serviceable tyres cannot be made from plantation rubber, for many of the tyres had run long distances on heavy cars and were still in good condition. For some obscure trade reason, pneumatic tyres were not allowed to be exhibited, by those, manufacturers who belonged to the Motor Manufacturers' and Trades' Union, so only a few firms were represented. Messrs Moseley & Sons showed motor car tyres, guaranteed for 3000 miles, made from plantation rubber; the Leyland and Birmingham Rubber Co. Motor-cycle and cycle tyres; and Messrs Wood-Milne solid rubber tyres which had run over 60,000 miles on the wheels of London motor omnibuses, probably the most trying of all services, also made of plantation rubber. It is interesting to observe that several manufacturers, amongst others being the makers of the "Clincher" tyres, the North British Rubber Co. are now advertising in the Motor Journals that their tyres are made of all-plantation rubber, while Messrs Dunlop state that they are the "largest users of plantation rubber in the British Empire."

At the first rubber Exhibition of 1908, Sir Henry Blake, in his inaugural address, laid much stress on the future use of rubber as a road surface. At the then high prices ruling it appeared a rather impossible application, but at present his ideas seem much nearer successful application, though the structural problems involved are by no means so simple as at first sight they may appear to be. Their ultimate solution is, doubtless, only a question of time, and when that time comes all fears of flooding the market with rubber will be at an end. The piece of rubber paved roadway laid in the Old Kent Road nearly twelve months ago was visited and inspected, by invitation, during the Exhibition, while a section of it was on view on Stand No. 166. It was laid by the Leyland and Birmingham Rubber Company, Ltd., where there is said to be some of the heaviest traffic in London. At the present time, it seems to be in excellent condition, while the wooden pavement surrounding it has been worn down considerably below the level of the rubber. To be a financial success, it must of course, outlast many renewals of the wooden blocks of a wood pavement. As a flooring surface for indoor use many beautiful examples were shown, while the tennis court was pronounced by players to be a decided success. The Harburg and Vienna India Rubber Works exhibited a rubber mat which was awarded a gold medal at the London International Exhibition of 1862. It is still in good condition, though it has been in constant use for 52 years. Many new applications were

exemplified in the exhibits of various manufacturers, and the Rubber Room of the North British Company was a centre of attraction.

The Malayan Section was visited by His Royal Highness Prince Arthur of Connaught after the opening ceremony on the 24th June, by Her Royal Highness Princess Marie Louise of Schleswig Holstein on June 29th, by the Lord Mayor and Sheriffs of London on the 26th June, by the Right Hon. Lewis Harcourt, Secretary of State for the Colonies, by Sir John Anderson, Under-Secretary of State for the Colonies, and many other distinguished people. In such a large building, it is difficult to form much idea of the number of persons present, but the attendance did not appear to be quite as good as at the last London Exhibition.

During the last few days a certain number of schools visited the Exhibition, which, taken as a whole, was probably one of the most interesting and instructive ones that has been got together for many years past in England. It was a great pity that the Managers of schools and the educational authorities did not take fuller advantage of the facilities which were afforded them of giving instruction to their pupils in branches of knowledge which are not to be found in school books. The attitude of educationists in America towards the Exhibition of 1912 was a great contrast to that of our own on the present occasion.

As at the three former Rubber Exhibitions, every consideration and courtesy was extended to the Exhibitors by Mr. A. Staines Manders, the Organising Manager, and Miss D. Fulton, the Secretary, and the smooth running of everything connected with the Exhibition was undoubtedly due to the perfect organization of the many complex details of the whole undertaking.

NOTES ON THE GROWING OF FOOD STUFFS IN MALAYA.

BY F. G. SPRING.

This article which is written at the request of the Director of Agriculture would possibly not have been published at this date, but the present conditions render it a suitable time for a short paper on the subject. It is not intended to go into detail as regards any of the crops, but merely to give some of the more important factors concerned in their cultivation. The writer is aware that such crops, as a rule, are not attractive to the European planter, but it is difficult to say what their value may be in the near future, in view of which, it seems desirable to further their cultivation, if even on a small scale.

A number of the products could be grown as catch crops amongst rubber or coconuts while many uncultivated patches might be profitably utilized in this connection. Fruits are not dealt with here but these also might, to advantage, be more generally grown.

Maize (Indian corn) :—This valuable cereal although fairly well suited to the climatic conditions of Malaya is grown only to a small extent by market gardeners and sometimes in the native Kampongs. In India it is extensively cultivated. The green cobs form an excellent vegetable while the ripe grain is largely used in the preparation of special articles of food. Rich soils are best suited to its growth, these should be deeply cultivated. The seed is sown broadcast and lightly turned under, 10 to 15 lbs are generally allowed per acre. Little after cultivation is required other than weeding. The crop takes from 3 to 5 months to mature depending on the variety. If the cobs are required as a vegetable they are pulled while green otherwise the cobs are left until the leaves surrounding them become shrivelled. Suitable manures are burnt earth, bone dust, and cattle manure.

Jerusalem Artichoke—This vegetable is well adapted to the conditions of Malaya. Details regarding its cultivation are published in the *Agricultural Bulletin F. M. S.* Vol. II page 326 by Mr. J. Lambourne from which a few notes are taken. Little cultivation is required beyond deep changkolling of the lands before planting, and keeping down weeds until the plants are large enough to shade the ground. A dressing of well rotted cattle manure should be forked into the land a few weeks before planting. The best time for planting is just as the young shoots are appearing on the tubers. The tubers should be planted in rows two feet apart. Three to four months are usually required from the time of planting until the crop is available. The tubers are ready for the table when the leaves begin to wither and dry. The plants will grow in almost any situation but the best results are obtained when they receive liberal treatment in the matter of soil, and plenty of room to develop."

Sweet Potatoes :—The choice of soils is of considerable importance. It thrives best on a light sandy loam, stiff clays are not suitable. The land requires to be cultivated fairly deeply to permit of the proper development of the tuber. They may be grown on flat ridges which should be about 3 feet apart. The stem cuttings are planted on top of the ridges at distances of about 1½ feet. If grown on the flat, they can be planted in rows about two feet apart each way. The tubers may also be used for propagation purposes but the former is the general method. Weeding, in the elementary

stages of its growth, requires to be well attended to. The crop is best lifted during dry weather.

Yams:—This vegetable, in some countries, forms a standard diet both for Europeans and natives. Being more nutritious than the potato they are one of the most important foods of the tropics. Some 20 varieties of yams have been grown at the Kuala Lumpur Experimental Plantation, and although on a small scale, it was sufficient to indicate that the soil and climate are ideal for the proper development of the tubers. Suitable soils are sandy loams, but deep cultivation and good drainage are more important than quality of soil. The land should be forked or changkolled, and if possible manured. The soil is thrown up into ridges 3 to 4 feet apart, and the seed tubers planted on the ridges at distances of from 1½ to 2½ feet, depending on the variety. Near each plant is placed a stick for the creepers to grow upon. The stick should be from 12 to 16 feet above ground. A common practice is to plant up trees for support. When this is done, pits are dug near the trees, fresh soil and manure being put in after each crop. It is not unusual to allow the plants to trail on the ground but this method is supposed to reduce the yield slightly. The crop takes from 9 to 11 months to mature.

Ground-Nut:—The soil best suited to this crop is a sandy loam, with free subsoil drainage. The land must be changkolled or forked to a depth of about 7 inches, and the surface soil brought to a fine tilth by breaking up the lumps of earth. The nuts are shelled and the seeds sown at distances of 18 inches apart each way, and at a depth of about one inch. In this country they seem to do best when grown on the top of flat ridges; little after cultivation is required beyond weeding, but this must be carefully done so as not to interfere with the nuts which are developed at a small depth under the soil. The crop should be ready to harvest in about four months. The nuts are collected when the leaves begin to wither. When collected, they should be spread out in the sun, in order that they may be thoroughly dried before being stored. An important point to be remembered when growing ground nuts in this country, is to plant at such a time as to insure harvesting in the dry weather. Silt, ashes and cattle manures are suitable.

There are many varieties of this nut but perhaps as good as any are the Mauritius, Senegal, Spanish Pea-Nut, Small Japanese and Mozambique.

Vigna Catjang:—There are several forms of this plant, the one commonly seen in this country has long pods and is raised by market gardeners as a vegetable. They are often sold as a substitute for French beans. It is said to do best on light alluvial soils or

loamy lands. This bean has been grown successfully at the Kuala Lumpur Experimental Plantation for some time past and appears well worthy of extended cultivation. When cultivated on a small scale it is generally grown in prepared nursery beds, the seed planted in rows about eight inches apart, the young plants being trained to grow upon sticks, two or three plants to each stick. In India the soil is prepared and the seed sown broadcast. The crop is ready for collecting in about 2½ months.

Tapioca:—This product has its objections in respect of its being an exhaustive crop. It does not seem advisable to use it as a catch crop. It is propagated from stem cuttings, about 6 inches long, the cuttings being half buried in the soil in a sloping position. The distance of planting may be 4 feet apart each way. After the crop is planted, weeding is all the cultivation that is required. It generally takes about 12 months to mature.

The following list of vegetables is also worthly of note:—Lettuce, Endive, Kohl-Rabi, Snake, Bollh and Wax Gourds, Cucumbers, Tomatoes, Spinach, Beet, Carrot (short horn varieties), Colus Tuberosus, Hoopher, Brinjal, Okra, and Yam Beans.

LEAF-SPOT DISEASE OF GROUND NUTS.

BY F. T. BROOKS.

Ground Nuts (*Arachis hypogaea*) are frequently attacked in this country by the fungus *Septogloeum arachidis*, Rac. which causes the formation of circular black spots on the leaves. A leaf may bear several of these spots which are usually rather less than ¼ inch in diameter. The older leaves of a plant are those first attacked and in the case of severe injury the plant becomes defoliated with the exception of the youngest leaves at the top.

The spores are produced on small protuberances which arise on the dark spots, chiefly on the under surface of the leaf. The individual spores are cylindrical in shape, light brown in colour, and 3 to 5 times septate.

The presence of the fungus checks the function of elaborating food reserves normally performed by the leaves and consequently the yield of nuts is often seriously reduced.

The fungus is well known in Java, Ceylon, and other tropical countries. Butler writing in the Agricultural Journal of India for January, 1914 reports that in the Bombay presidency it was the probable cause of the reduction in export of these nuts from 78,000 tons in 1894-5 to 2,800 tons in 1902-3. Since the latter date how-

ever other varieties have been introduced which mature earlier and in consequence escape the attacks of this fungus. With the introduction of these varieties the export actually recovered to 48,800 tons in 1912-3.

It would be worth while to try here on a large scale some of the varieties which have been so successful in India. The disease would be difficult to combat by spraying as the foliage lies very near the ground so that the under surface cannot readily be reached by fungicides. Hence the introduction of varieties which escape the attacks of the fungus is the best way of checking the disease.

MINUTES OF MEETING OF PLANTERS' ASSOCIATION OF MALAYA,

Held at the Council Chamber, Taiping, on October 18th, 1914, at 10.30 a.m.

PRESENT:

Chairman: The Hon. Mr. E. Macfadyen.

Delegates:—

Batang Padang P. A.:—Mr. W. H. Tylden Patterson.
Batu Tiga D. P. A.:—Mr. T. J. Cumming.
Central Perak P. A.:—Mr. H. de Z. Lancaster and Mr. O. H. Orr
Klang D. P. A.:—Mr. E. B. Prior.
Kuala Lumpur D. P. A.:—Mr. A. J. Fox, Mr. V. Utterson Kelso and Mr. Clyde Jeavons.
Kuala Selangor D. P. A.:—Mr. L. A. Irving.
Malacca P. A.:—Mr. J. W. Campbell.
Malay Penninsula Agricultural Association:—Mr. Thomas Boyd and Mr. W. Duncan.
Negri Sembilan P. A.:—Mr. S. S. Crisp. Mr. P. W. N. Farquharson and Mr. J. D. McCulloch.
Taiping P. A.:—Mr. A. Waterfield and Mr. G. N. Magill.
Ulu Selangor D. P. A.:—Mr. M. J. Kennaway.

Honorary Member:—The Ag. Controller of Labour (Mr. E. S. Hose).

Visitors:—The Hon. Mr. Oliver Marks (Ag. Resident of Perak) and Messrs. W. H. Tate, P. Macdermot, J. Dickson, W. A. T. Kellow, E. T. Jacques, P. R. Pinhorn, J. Grieve, Percy E. Cobham, R. B. W. Grove, George Low and E. Wallis Wilson.

Secretary:—Mr. H. C. E. Zacharias.

1. The Minutes of the previous Meeting held on August 23rd 1914 are taken as read and, on the motion of Major Fox and Mr. Farquharson, confirmed and signed.

2. The War.

a. Enlistment.

The *Chairman* suggests, on the principle of taking the most interesting items first, to start with a motion standing in the name of Mr. Farquharson, on the question of Government aid for those proceeding Home to enlist—a motion which he felt sure was of absorbing interest to them all. With their permission he therefore would now call on the proposer.

Mr. *Farquharson* proposes that Government be asked to send home Europeans suitable for military service and ready to give an undertaking that they will enlist in the British army in any capacity and that if Government refuse, the P. A. M. start a fund for the same purpose.

While quite agreeing with the Chairman's letter to the local papers published during the first weeks of the war he was of opinion that the time now had come when the country can spare a certain number of men for the front. During the first few weeks when they were holding back wages there was a natural fear that there might be internal risings and that every European available was required to protect, not only his employers' property but the lives of the women and children in this country.

This fear had now passed and with the steps taken by Government to keep down prices of food stuffs and protect life and property there was no immediate fear of such risings.

If the Government required the local volunteers for police work or local protection from external raids there must be hundreds of men in this country with previous regular or volunteer experience and whose responsibilities and other ties prevent them from volunteering for active service, who would be only too keen to join the M. S. V. R. or any other corps of volunteers got up for local service during the time the war lasts.

During the first few weeks he had met several men who had just resigned from the regular army and who were only too keen on getting to the front. Officers who have had several years' experience and who only resigned as they could see no prospects of promotion; others who have had considerable volunteer experience but who could not put up the money to buy a passage home. Surely these men should be given an opportunity of serving the Empire in such a way as they considered most fit.

One of the few ways they could serve the empire out here, where they felt hardly any effects of the war, was by affording facilities for those men who were fit to take their places in the firing line to get there. Mr. Asquith in his speech at the Guildhall said "we want more men, men of the best fighting quality" and where could one find men of better fighting quality than the type to be found out here.

It had been said that men from this country could not stand a winter campaign. They will not be asked to. They all knew that Lord Kitchener would not have untrained men and that he put the time for the necessary training from four to six months.

If men were sent from here now it would be March or April next before they were sufficiently trained to go to the front so they wont have to face a winter campaign at all events till they are fit and have nothing to fear from a European winter.

In conclusion he would suggest that if Government will not accept this resolution, that the P. A. M. get up a fund to provide passages for as many suitable men as possible. Men who have been locally passed as fit and have given their word that on arrival home they will enlist in some battalion of the new army destined for the front when ready. He felt sure that the R. G. A. or the Malay States Agency would look after the interests of such men and give them every assistance in their power.

He saw from the papers that His Excellency the Governor is reported to have some such scheme on hand. If so this resolution might strengthen his hand in getting permission from home. If permission was refused him, they should start their own fund and send home suitable recruits. They would be accepted fast enough at home. The military authorities had accepted men from Ceylon and China and there was no possible reason why they should not accept suitable recruits from here.

Mr. *Campbell* briefly seconds the proposal.

Mr. *Grove* endorses all that had been said and relates the steps already taken by himself in the matter. After reading extracts from correspondence that had passed between himself and H. E. the General Officer Commanding, he informs the Meeting that he had already sent to H. E. the High Commissioner the names of 69 men, many of whom had seen active service and all of whom were anxious to go to the front.

Mr. *Tylden Patterson* thinks if free passages were given there was no doubt many men would go and would not stop to consider their obligations under agreements. The selection of those going home should be made very carefully and only men sent who would really be useful at the front. There was a rumour that half the M. S. V. R.

were going: all the more reason then that all those remaining behind should be given every opportunity of making themselves efficient.

Mr. *Waterfield* suggests that the Association gather particulars of the military experience of those who had to remain, as he felt that such particulars would be such as to free the hand of the Government in showing what would remain for local defence.

Mr. *Macfadyen*, while personally strongly in favour of the resolution, in view of the public discussion which had taken place thinks it only fair to protest against the assumption so generally made by correspondents to newspapers and others that the F. M. S. had not done their share in the past and were not doing their share now towards the defence of the British Empire. How generously the F. M S. and S. S. had interpreted their obligations in the way of internal defence he thought was probably not realized by a very great many who lived in this country. Practically alone amongst British dependencies of any importance the money spent on defence in this country went entirely in the form of direct Imperial assistance. He might remind them that there is in Taiping the Guides Regiment which the F. M. S. had maintained purely and simply, and was always intended so, for Imperial defence.

In addition to that, within the last few years their administration had committed the country to a direct naval contribution. There had been, both in this country and outside it, a great deal of criticism of the present made by the F. M. S. to the Empire of a battleship. How unreasonable that criticism was had to his mind been demonstrated in the most striking fashion since this war broke out. Bismark once said that he would defend the German Colonies, if need be, in Egypt: and we all realise now that our own Colonies can only be attacked in the North Sea. How rightly those who were responsible for the existence of the Malay battleship interpreted the true interests of this country and of the Empire could no longer admit of any dispute.

Well, the F. M. S. had become chargeable, on that account, last year with over one and a half million pounds. That was to say the direct contribution for Imperial defence, both military and naval, extremely prudently designed and most effective, had amounted to virtually two million sterling in the course of 12 months. In no part of the Empire had anything like that been done. The Commonwealth during recent years had maintained a navy and in addition had made a direct naval contribution of £200,000 to the British Navy. New Zealand had made a direct contribution of £40,000 per annum. Taking it that the whole of the Commonwealth Navy was to be regarded as a direct contribution to Imperial defence, the whole naval estimates of the Commonwealth for the year were two and a

half million sterling. The S. S. Government, with smaller and much less wealthy territory, contributed annually to the British Imperial funds over a quarter of a million sterling, more by a good deal than the direct Australian contribution.

He did not for one single instant mean to suggest that money payments were any equivalent for personal service, but he thought it right the facts should be brought to the notice of the community generally which went to show that the duty and the debt of the F. M. S. to the Empire had been recognized and its discharge very wisely and prudently provided for. Personal service when war broke out was a very different thing from foresight and generous provision before. In the last few weeks certainly over forty men had gone from the F. M. S. to the front. That number out of their European population represented the same proportion as about 12,000 men would from New Zealand, about 56,000 from Australia, and about 80,000 from Canada. These men in almost every instance had gone Home at their own expense and without the beating of the drum or sending round the recruiting sergeant. There was no doubt at all that number would be increased steadily as the weeks went by. The calling out of the Special Reserve alone would considerably increase it. He quoted these facts not with a view to suggesting that they ought to weigh up their patriotic sympathy or to measure out to an exact equivalent of their love and devotion to England and all that England meant to them. He did it simply to show that, although there had been no official or formal participation, the community as a whole had not shirked its duty and to give a reason for his belief that it would not shirk its duty as time went on. It was because he thought that to be the case that he was more in favour of Mr. Farquharson's resolution than of the suggestion by a subsequent speaker that an official contingent should be organized and sent Home. He believed if they raised a contingent in Taiping during the next fortnight there would not be an Englishman under forty left in Perak If that were true, as he believed it to be true, they had to consider whether the contribution this community would make in the form of service in the ranks by the whole community was the most fitting way in which they could discharge their duty to the Empire. He ventured to think, if they figured it out, they would come to the conclusion it was not, although to argue against it was not a very attractive nor a very pleasant duty.

The necessity was obvious in time of war of maintaining certain industries necessary to war, and not allowing the workers in them to be mobilised. If the community took any action which resulted in the complete breakdown of the rubber plantation industry they would be doing the Empire as a whole infinitely more damage than

they could repair by their service in the ranks. They were apt to talk as though the war might be terminated by a single overwhelming victory, or as though a stray bullet which killed the Kaiser might put an end to it. That was not so. They were not up against the Kaiser or any one man or clique or general staff. They were up against the whole of a mighty nation. To carry this war to the only conclusion which could be admitted from our point of view was not going to be a matter of months, but much more likely a matter of years. The function of Great Britain was certainly to put great and increasing forces in the field, but above all, in order to be able to do that, she had to be able to maintain her commercial supremacy in order to be able to realise her absolutely unrivalled resources.

The planting community here was in charge of property which cost forty million sterling to bring into existence They were concerned not merely in that way with an important part of the commercial welfare of Great Britain ; it was not merely that the carrying on of their estates meant to a not inappreciable extent the maintenance of credit in the City of London ; but they were actually engaged in producing what under modern conditions had become one of the most important munitions of war. If war was long continued the position of Great Britain in control of the rubber industry might be as important as the relative ability of Government to turn out ammunition. He would not attempt to examine the duty of the Empire to a country like this. He preferred to speak merely of their duty —after all the most important—their duty to England. He was quite certain they would be wrong if they lent themselves to any movement which was likely to leave this country unable to carry on the rubber industry. They must, he knew, look forward to a certain lack of supervision and consequent reduction of efficiency and increase of costs, but as far as older men could set free for service younger men they should do so. If Government were willing to assist individuals to go Home to enlist, he thought the P. A. M. should offer its services to Government to help in the selection of men and to keep recruiting under careful control (applause).

The motion is then put to the vote and carried unanimously.

b Payment of Wages.

The Secretary reports the steps taken and reads the following circulars and letters issued and received by him :—

"Kuala Lumpur, 25/8/14."

"Rubber Growers' Association, 38 Eastcheap, London."

"Estate coolies will receive balance July pay September fifth "full amount August pay September twentysixth. Planters' Association Malaya."

(Sgd.) H. C. E. Zacharias,
Secretary."

"Kuala Lumpur 26th August, 1914."

"Dear Sirs,

Enclosed please find copies of a circular, which I have been instructed to issue with a request kindly to give it the widest possible publicity amongst your members.

Thanking you in anticipation,

Believe me, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

To all Secretaries of Constituent Associations.

"Kuala Lumpur, 26th August, 1914."

"Dear Sir,

"Temporary Suspense of Section 70 And 104 Of The Labour Code."

As you are no doubt aware, the following resolution was carried at a Meeting of this Association held on the 23rd inst.:

"This Association strongly recommends the payment on September 5th of the balance of any July wages then still due to coolies and expects that it will be possible to pay the August wages by September 26th and to resume the payment of wages in accordance with section 70 of the Labour Code as from October 8th, 1914."

In explanation I am instructed to add that the above resolution has the effect of releasing on September 5th members from the obligation not to pay July wages, as agreed at the Emergency Meeting held on the 6th inst. Until then advances will be continued, as hitherto.

Rice issues should be recovered according to usual custom from the pay of the month of issue.

As regards August wages, the undertaking not to pay wages in full is still operative until September 25th, but not after that date, unless any further agreement is come to in the meantime.

Coolies, whom it may necessary to pay off, should be paid up to date without delay; but in all such cases, unless new employment is found for them, the discharge of such coolies should be reported beforehand to the Labour Department."

"Indian Immigration Assessment."

"At the same Meeting of this Association, the Acting Controller of Labour explained the action that had been taken by the Indian Immigration Committee in the matter of assessment on Tamil Labour, in view of the temporary stoppage of immigration from India and that the committee had recommended to fix the assessment rate for the fourth quarter at 50 cents instead of $2. It is unfortunately not possible to afford any relief to employers in respect of the assessment payable now and in the next quarter in respect of the second and third quarters, as that has already been fixed by law at $2 and the Committee has no power under the Enactment to vary it. It is hoped, however, that the very material reduction recommended for the fourth quarter will prove an adequate compensation for the loss involved in the temporary cessation of recruiting. Whenever it is possible to start recruiting again, the fund will be in a position to meet all the usual expenses, and the recruiting allowances recommended for the fourth quarter are at the rate of $4. Should it prove necessary to extend the prohibition of recruiting beyond three months, the Committee will consider what further relief can be given to subscribers to the Fund."

Believe me, etc..

(Sgd.) H. C. E. Zacharias,

Secretary."

"Kuala Lumpur, 27th August, 1914."

"The Hon. The Chief Secretary, F. M. S.,

Kuala Lumpur."

"Sir,

I have the honour to enclose for your information copy of a circular distributed by me amongst the members of our Association and informing them of the decisions agreed upon at our Meeting held on the 23rd inst.

A further resolution was subsequently carried in respect of the—it was hoped few—estates, which would not be able to pay the balance of their July wages on September 5th, to the effect "that Government be urged to place at the disposal of such estates against security a sum sufficient to cover the said July balance."

"I have, etc.,

(Sgd.) H. C. E. Zacharias,

Secretary."

"Office of the Controller of Labour,
S. S. & F. M. S."
"Kuala Lumpur, 10th September, 1914."

"No: 2 in 469/1914"

"Sir,

I have the honour to inform you that, in accordance with instructions received from the Chief Secretary, the provisions of the Labour Code with reference to the method and date of payment of labourers' wages will be strictly enforced after the close of the current month.

"2. I would ask you to be so good as to convey this decision to the members of your Association."

"I have, etc.,
(Sgd.) E. S. Hose,
Ag. Controller of Labour, F. M. S."

"The Secretary,
Planters' Association of Malaya,"

"Kuala Lumpur, 14th September, 1214."

" Dear Sirs,

I have to-day received an official notification from the controller of Labour to the effect that.

" in accordance with instructions received from the Chief
" Secretary, the provisions of the labour Code with reference to
" the method and date of payment of labourers' wages will be
" *strictly* enforced after the close of the current month."

In asking you kindly to convey this official decision to the members of your Association, I would add that, since Tibhavali falls on October 18th of this year, I have reasons for believing that the Government would, in the case of Tamil coolies, most probably not institute legal proceedings, unless payment of September wages was deferred until after that date."

" Believe me, etc.,
(Sgd.) H. C. E, Zacharias,
Secretary."

"The Lower Perak District Planters' Association."

" Teluk Anson, 21st September, 1914."

" The Secretary,
Planters' Association of Malaya,
Kuala Lumpur."

" Dear Sir,

At an extraordinary General Meeting of the above Association held here on the 19th instant, we were instructed to write to you

and protest strongly against the action of the Parent Association in deciding such an important question as the payment of deferred wages without previously duly notifying local Associations that the matter was coming up for discussion.

It is felt here that the financial situation did not warrant the optimistic action of the P.A.M. and that the immediate result of such decision is the notification recently issued by the Controller of Labour to the effect that "the terms of the Labour Code as regards the method and date of payment of Coolies wages will be strictly enforced after the close of the current month" as per your letter of the 14th instant.

That this Association is not alone in disagreeing with the decision arrived at by the P.A.M. is proved by the fact that the M.P.A.A. also dissented and we would here mention that the decision arrived at the M.P.A.A. was practically adopted by this Association on the 1st instant.

The question now arises as to whether the Controller of Labour would consider the application of any individual Estate should such Estate momentarily be unable to comply with Government's requirements and be thereby compelled to apply for temporary exemption.

We shall be glad to have your advices on this piont and in view of the facts which have given rise to this possibility we would ask you most earnestly to give this Association due notice of all important questions that may come up for discussion in the future, since it is felt that in the present instance the action of the Government has been greatly influenced by that of the P.A.M. which on the occasion in point was not representative of the whole planting community."

"We are, etc.,
BOUSTEAD HAMPSHIRE & CO., LTD.
(Sgd.) J. T. Johnson,
Secretaries."

"Kuala Lumpur, 24th September, 1914.'

"Messrs. Boustead Hampshire & Co., Ltd.,
Secretaries :—
Lower Perak P.A."

"Dear Sirs,

I thank you for your favour of the 21st inst. and regret extremely that your Association should not have been specially informed that the payment of wages would be discussed at the P.A.M. Meeting on Aug. 23rd. The agenda for the meeting was printed before the outbreak of war and was posted on Aug. 8th. As you

are aware, events occurred in the meantime which made it necessary to summon an emergency meeting on Aug. 6th to deal with the payment of coolies. It was impossible however that this extraordinary and irregular meeting should commit the Association as a whole for a longer time (if at all) than until its next regularly convened meeting and I was under the impression that every one understood the emergency policy then adopted, to meet a temporary situation, would come up for consideration at the ordinary meeting on Aug. 23rd. It would not have been fair—apart from any question of irregularity—to expect the planting community as a whole to be bound by a decision arrived at when only those living near to Kuala Lumpur had the opportunity to attend.

I see now, however, that it would have been wiser not to assume that this would be generally understood and repeat, that I much regret it did not occur to me to notify you specially that this matter must necessarily come up for discussion on August 23rd.

If the absence of a special notice prevented the attendence of delegates from Lower Perak it was peculiarly unfortunate as I believe misunderstanding would have been obviated and the line adopted must have secured your support had you participated in the discussion. The resolution to defer payment of coolies was not adopted by the emergency meeting, as a means of economy, but because of the collapse of banking and exchange arrangements. On the restoration of these it was felt by those at the largely attended meeting on Aug. 23rd that the first essential for the industry in these times must be economy. Economy however involved lowering rates and reducing labour forces; but neither was possible so long as members were bound by an undertaking not to pay wages. On the contrary liabilities must under this system increase until the total liability for unpaid wages become a formidable danger to the industry. For this reason it was felt that members must be released from their undertaking not to pay wages in full.

The general feeling of the meeting was not one of optimism, but a feeling that low prices must be anticipated and prepared for.

It is quite a mistake to suppose the P.A.M. resolution suggested the action of the Controller of Labour, to which you refer me.

Government had expressly limited its sanction of the emergency arrangements to a fortnight on the assumption that remittances would by then once more be possible. This proved to be the case and Government before the P.A.M. meeting on the 23rd ulto. communicated its intention to apply the law forthwith. In view of an assurance from the Chairman that the matter would be discussed on the 23rd ult. the Controller attended that meeting and in due course obtained from Government its concurrence in the proposals

then agreed to. It is quite certain that without what took place at that meeting more rather than less drastic action would have been adopted by Government and the meeting had to take this into account.

I much fear it will be useless to apply for exemptions in favour of individual Estates. The attitude Government has taken up is that liabilities for coolies' pay must be discharged in full and if that cannot be done the coolies must be discharged and that this will be the best thing both for the individual and the community in the long run. I am able to say, on the Chairman's authority, that Government has agreed to advance money to Estates which find themselves in this position, in order that they may discharge their liabilities to their coolies. But this must obviously be a last resort since money will only be advanced to pay off a labour force. It is meant to prevent disturbances, more than to assist planters.

Once more apologizing for my omission to send out a supplementary agenda."

"Believe me, etc,
(Sgd.) H. C. E. Zacharias,
Secretary."

"THE LOWER PERAK DISTRICT PLANTERS' ASSOCIATION."

"Teluk Anson, 26th September, 1914."

"The Secretary,
The Planters' Association of Malaya,
Kuala Lumpur."

"Dear Sir,

We are in receipt of your favour of the 24th instant and thank you for the trouble you have taken in explaining the situation.

Your letter will, of course, be placed before the Members of our Committee at the next Meeting."

"We are, etc.,
BOUSTEAD HAMPSHIRE & CO., LTD.
(Sgd.) J. T. Johnson,
Manager.
Secretary."

"Kuala Lumpur, 29th September, 1914."

"Sir,

My attention has been drawn to a remark, attributed to you, in a newspaper account of the last Central Perak Planters' Association Meeting, to the effect that the Government's decision to enforce

the provisions of the Labour Code in regard to payment of wages of Estate Labourers, must have been prompted by the action of this Association in rescinding, on Aug. 23rd a resolution it had adopted on Aug. 6th to defer, for the time being the payment of wages.

2. I have the honour to submit that your suggestion, if correctly reported, appears to convey a wrong impression of the facts.

3. Before the P.A.M. Meeting on the 6th August the consent of the High Commissioner was obtained in advance to the postponement, if it should be asked for, of the liability to pay wages, for a fortnight, on the ground of the breakdown of banking and exchange facilities. To any further postponement, after the restoration of the machinery of remittance between this country and England, His Excellency declined to consent: as opposed in his opinion, to the true interests of the country.

4. This was one of the leading features of the situation which had to be considered at the P.A.M. Meeting on Aug. 23rd; and the resolution adopted at that Meeting was adopted as being the furthest, in the way of further postponement, that there was a chance of persuading the Government to sanction."

"I have, etc.,
(Sgd.) E. Macfadyen,
Chairman."

"The Hon. The British Resident,
Perak."

"No. 2 in 5399/1914"

"British Residency,
Perak.
5th October, 1914."

"Sir,

I have the honour to acknowledge the receipt of your letter of the 29th of September ultimo on the subject of a remark made by me at the last meeting of the Central Perak Planters' Association and to state what actually occurred.

2. I was asked by the Chairman whether I could inform the meeting of the reasons which had led the Government to enforce the provisions of the Labour Code.

I replied that I was without information on the subject, that I had not been consulted in the matter and knew only what I had gathered from the newspapers and the notification publishing the intention of the Government to enforce the Code, and I added:—"From what I have read it almost seems that the P.A.M. have "invited the action of the Government in having proposed practically what is provided for by the Law."

3. I did not know that my remark, which was merely an expression of opinion and not a statement of fact, would be published and I must express my regret if a wrong impression has been conveyed."

"I have, etc.,
(Sgd.) Oliver Marks,
Acting British Resident,
Perak."

"The Hon. Mr. E. Macfadyen,
Chairman,
Planters' Association of Malaya,
Kuala Lumpur."

"Kuala Lumpur, 7th October, 1914."

"Sir,

I have the honour to acknowledge receipt of your letter 2/5399 of the 5th inst. and to thank you for the courtesy of an explanation."

"I have, etc.,
(Sgd.) E. Macfadyen,
Chairman."

"The Hon. The British Resident,
Perak."

C. Resumption of Immigration.

The *Chairman* invites the Ag. Controller of Labour to inform them of how this matter stood.

Mr. *Hose* states that immigration had not been stopped. What happened at the outbreak of war so far as his department was concerned was that instructions were given not to issue any more assisted passages to labourers coming to this country for the present, and that was a temporary measure, as he understood, resorted to owing to the sudden and unexpected diversion of funds, but he felt confident that any feeling which was given expression to by that Association would receive the most careful consideration of the Government. He had not himself noticed any indications of a great demand for labour at present. Speaking purely from memory, he thought that the number of deck passages back to India since the beginning of August, was roughly between four and five thousand, and more than two thousand of those were destitute Tamils who had been sent back by the Government as not only unemployed but, at any rate at that time, unemployable. The rest were those who had gone back at their own free will in the ordinary course and

at their own expense. He did not think the number for two months and a half could be considered excessive. Whatever was done in the resumption of immigration, it would not be possible to do it on any large scale. They had now got beyond the ordinary popular season for Indians coming over here, and another serious factor was that the British India Company were not at present supplying a weekly service of Boats, but only fortnightly service for the mails, while the sort of boats running were smaller and not those usually used for the conveyance of coolies.

Mr. *Tylden-Patterson* considers the figures quoted interesting, but not conclusive, as it was obvious that, had the payment of wages not been deferred, the number of returning Indians would have been larger. He would move that assisted immigration be resumed as early as possible.

Mr. *Crisp*, seconding, thinks an effort should be made to get back kanganies who he said were being held up in India.

Mr. *Prior* agrees that kanganies would be much better employed on the estates.

Mr. *Magill* asks what was the reason for kanganies not coming back.

Mr. *Hose* explains that Madras and Negapatam had been notified as infected ports, and so far as he knew that notification had not yet been withdrawn.

Mr. *Duncan* also speaks in favour of immigration being resumed, as necessary if they were to make up wastage.

Mr. *Irving* wishes at least the registration of Kangany licenses in Penang to be resumed.

The resolution is then put to the vote and carried unanimously.

D. Repatriation of Estate Labourers.

Mr. *McCulloch* draws attention to the assisted emigration of Chinese and is afraid that these free passages had enticed away some of the best of their coolies.

He believes a great many who had money had given it to a friend to take on ahead to Hongkong while they went home free as destitutes. He thinks this assisted emigration should now cease entirely except as regarded vagrants and others unfit and would therefore propose

"that the repatriation of all able-bodied estate coolies be "stopped."

Mr. *Farquharson* seconds the motion and endorses the hardship felt in Negri Sembilan in this connection.

Mr. *Duncan* is rather against the proposal, as it was clear there were too many Chinese miners in the country, although he

must admit that apparently so far only 700 vagrants had been repatriated from Perak.

Mr. *Campbell* knows of many cases, in which Chinese from Malacca had gone to Kuala Lumpur, to get a free trip to China. The measure was being abused and certainly was against the interests of the planting industry.

The motion is then put to the meeting and carried.

3. Batavia Congress.

The *Secretary* reads the following correspondence :—

"International Rubber Congress and Exhibition."

"Singapore, 2nd September, 1914."

"Circular Letter."

"Dear Sir,

A telegram has been received from the Executive Committee at Batavia informing this Committee to the effect that the above Congress and Exhibition will be opened on

Monday, October 19th, 1914.

Exhibits: The "Malaya" Exhibits having been detained in Singapore will now be forwarded to Batavia without further delay.

Congress: Will those holders of Congress-cards who think they will be able to attend the Congress communicate with me at once so as to enable me to arrange for steamship and hotel accommodation."

"Yours faithfully,
(Sgd.) W. E. Van Rijnberk,
Hon. Secretary, the Singapore
Sub-Committee, I.R.C.E., Batavia, 1914."

"Kuala Lumpur, 16th September, 1914."

"No: 15 in 5843/1913."

"Sir,

I am directed to address you on the subject of the Rubber Exhibition to be held at Batavia and to inform you that in view of the present circumstances the Government does not consider itself justified in sending any delegates."

"I have, etc.,
(Sgd.) J. F. Owen,
Ag: Under-Secretary, F.M.S."

The Chairman,
Planters' Association of Malaya,
Kuala Lumpur."

"Kuala Lumpur, 17th September, 1914."

"W. E. Van Rynberk Esq.,
Singapore."

"Dear Sir,

In reply to your Circular of the 2nd inst. I regret having to inform you that in view of the present circumstances, the Government of these States does not consider itself justified in sending any delegates to the Batavia Rubber Exhibition."

"Believe me, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

"Singapore, 18th September, 1914."

"H. E. C. Zacharias Esq.,
Secretary—The Planters' Association of Malaya,
Kuala Lumpur."

"Dear Sir,

I beg to acknowledge receipt of your letter of 17th inst. contents of which I noted with much regret.

A copy of your letter was sent by me to the Exhibition Committee at Batavia."

"Yours faithfully,
(Sgd.) W. E. van Rynberk,
Hon. Secretary to the Singapore
Sub-Committee I.R.C.E. Batavia, 1914."

4. Bagan Datoh.

The *Secretary* reads the following letter:—

"Kuala Lumpur, 31st August, 1914."

"No: 17 in 8521/1913."

"Sir,

With reference to your letter of the 13th July last, I am directed to inform you that the Acting Resident is now taking steps to form a Drainage Board in Bagan Datoh District on lines similar to those obtaining in Klang and Kuala Selangor.

The Acting Chief Secretary understands that the Acting Resident has now offered a final payment, for drains cut by the planters in accordance with the arrangements originally suggested

in 1912, at a rate higher than that which was first agreed to and higher than the Government rate for similar drains."

"I have, etc.,
(Sgd.) J. F. Owen,
Ag: Under-Secretary, F.M.S."

"The Secretary,
The Planters' Association of Malaya.

5. Extradition of Absconders.

The *Secretary* reads the following correspondence:—

"Kuala Lumpur, 27th August, 1914."

The Hon. the Colonial Secretary, S. S.,
Singapore."

"Sir,

I have the honour to refer to your letter 5401/13 of Nov. 7th of last year re Extradition of Absconders.

The number of coolies absconding from Malacca into Johore is apparently on the increase: one Malacca Estate lost 69 Absconders in July, 47 in June, 44 in May. Another Estate lost 46 in July.

The matter came up again for discussion at the last Meeting of this Association held on the 23rd inst., when I was instructed to submit to you the great hardship entailed through the fact that absconding is not an extraditable offence as between the Colony and Johore, and to urge a reconsideration of the decision previously arrived at by H.E. the Governor in Council."

"I have, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

"Colonial Secretary's Office,
Singapore 4th September, 1914."

"Governor 5401/13."

"Sir,

I have the honour to acknowledge the receipt of your letter of the 27th August upon the subject of the extradition of absconding labourers.

2. As there appears to be some misunderstanding upon the subject, I will endeavour to explain the position briefly. Extradition between the Colony and Johore is effected under the "Straits Settlements Extradition Order 1889" (an imperial order in council dated the 19th August 1889), and extradition between the Colony

and the Federated Malay States is effected under the "Straits Settlements Fugitive Offenders Order 1904" (an imperial order in council dated the 15th July 1904.) The two orders are entirely distinct and separate, and their procedure is quite different. Under both Orders, however, the offence of absconding from labour is extraditable.

3. As between the Colony and Johore, the offence of absconding from labour is specially provided for in the first section of the "Straits Settlements Extradition Order 1889," where it is stated that with reference to each of the protected States a fugitive criminal includes a person accused or convicted of a breach of a contract or service. Reference to the second Schedule of the order shows that Johore is included in the list of protected States.

4. As between the Colony and the Federated Malay States, the offence of absconding from labour is included among the extraditable offences, because every offence in which a warrant can be issued is extraditable. There is however the special provision in section 7 of the Order, which provides that if the Magistrate considers that the offence is so trivial that it would be unjust to make an order for extradition, he may at his discretion decline to make that order. The Planters' Association of Malaya asked the Colonial Government last year to legislate in order to remove the Magistrate's discretionary power, and to this request the Government was unable to accede. An intimation to this effect was conveyed to you in my letter of even number dated the 7th November last.

5. I wish to invite your attention to two points: firstly that the Magistrate's discretion is only in cases of extradition between the Colony and the Federated Malay States, and does not exist in cases of extradition between the Colony and Johore, and secondly that the Magistrate's discretion is subject to the control of the Supreme Court, to which an appeal lies.

6. I shall be greatly obliged if you will inform me of any case in which a Colonial Magistrate refuses to permit extradition proceedings to be instituted in respect of an absconding labourer supposed to be in Johore, or in which a Johore Magistrate refuses to extradite such offender."

"I have etc.,

(Sgd.) W. George Maxwell,

Acting Colonial Secretary,

Straits Settlements."

"Kuala Lumpur, 7th September, 1914."

"J. W. Campbell Esq.,
Chairman, Malacca P. A.,
Malacca."

"Dear Sir,

I have received a letter from the Colonial Secretary dated the 4th inst. re extradition of coolies absconding from Malacca to Johore, and now beg to hand you copy of same.

From discussions at P.A.M. Meetings I gathered that there was no extradition by Johore of absconders from Malacca. The Colonial Secretary, however, as you will see, definitely contradicts any such assertion (3) and invites the statement of actual cases (6), in which a Johore Magistrate has refused to extradite an absconder.

To enable me to reply to the Colonial Secretary, I shall be glad if you will kindly let me know (1) whether you have all along been aware of the provisions of the Straits Settlements Extradition Order 1889 but that there are some circumstances which nullify its application in practice; and (2) furnish me with some of the concrete examples now called for by the Colonial Secretary.

Thanking you in anticipation,

"Believe me, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

"THE MALACCA PLANTERS' ASSOCIATION"

"Malacca, 15th September, 1914."

"The Secretary,
Planters' Association of Malaya,
Kuala Lumpur."

"Dear Sir,

I am in receipt of your letter of 7th September enclosing copy of a letter from the Colonial Secretary re Extradition of Coolies from Johore.

I am indeed surprised to be informed that absconding from labour is an extraditable offence.

The question was first brought up at a Meeting of this Association held in May 1913. The Resident of Malacca who was present informed the Meeting that this question had already arisen and that he had, 3 weeks previously, (April 1913) submitted the matter to Government pointing out that it was unreasonable that coolies could not be extradited. The Resident further explained that at the time law regarding extradition was passed, the offence of coolies running away was unknown, as Johore was then practically unopen-

ed. In face of the statement of the Resident, the Association could take no further action in trying to recover absconders from Johore until the law was amended. It certainly seems strange that, if absconding had all along been an extraditable offence, Government, in view of the correspondence in the matter, could not have imparted this information earlier.

You have a concrete example of refusal to return coolies to Malacca in the letter of the General Manager, Malacca Rubber Plantations published in the Minutes of the Meeting held at Johore Bahru on 13th July 1913 (page 17).

The Manager of Jasin Estate states that he has applied for warrants on several occasions at Jasin, but has on each occasion met with a refusal on legal grounds.

He unfortunately cannot give dates. The Manager of Paya Mas Estate, Muar (a Member of this Association) reports that a Johore authority refused to allow him to take proceedings to recover absconding coolies from Malacca on the legal grounds that absconding was not an extraditable offence. It will be a matter of great satisfaction to members of this Association if this matter can now be thoroughly cleared up."

"I am, etc.,
(Sgd.) J. W. Campbell,
Chairman."

"Kuala Lumpur, 16th September, 1914."

"The Hon'ble,
The Colonial Secretary, S.S.,
Singapore."

"Sir,

I have the honour to acknowledge receipt of your letter 5401 of September 4th on the subject of the extradition of Absconders from Malacca into Johore territory.

I have since been in further communication with the Malacca Planters' Association in this matter and have to-day received a letter from their Chairman, copy of which I have the honour to enclose, as also copy of the Minutes of our Meeting of July 13th 1913, referred to in the said letter."

"I have, etc.,
(Sgd.) H. C. E. Zacharias
Secretary."

Mr. *Campbell* amplifies the curious position they found themselves in, with the Resident Councillor of Malacca telling them that no extradition existed and the Colonial Secretary saying that it did.

They proposed to take a test case, if necessary; in the meantime concrete cases had been given to the Colonial Secretary, whose reply they were awaiting.

6. Corporations' Duty Enactment.

The *Secretary* reads the following correspondence:

"Kuala Lumpur, 27th August, 1914."

"The Hon. The Chief Secretary, F. M. S."

"Sir,

"*Corporations' Duty Draft Enactment.*"

I have the honour to inform you that the above Bill was discussed at a Meeting of this Association held on the 23rd inst., when the opinion was generally expressed that 3, b entailed great hardship on Charitable Institutions, such as the Planters' Benevolent Fund of Malaya, the grants of which are in the majority of cases made in favour of Planters' widows or orphans, living outside the Malay Peninsula; and that the probable yield of the tax seemed quite incommensurate with the vexatious nature of its incidence and the difficulties of its collection.

I was instructed accordingly to submit the Resolution unanimously arrived at, viz: that the words "within the Federated Malay States or the Colony" be deleted in Section 3, b of the said Draft Enactment."

"I have, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

"No: 2596/14." "Kuala Lumpur, 13th October, 1914."

"Sir,

In reply to your letter of 27th August ulto. on the subject of the Corporations Duty Enactment, I am directed to inform you that the Government is unable to accept the proposal of your Association that the words "within the Federated Malay States or the Colony" should be deleted in Section 3 (b) of the Draft Enactment."

"I have, etc.,
(Sgd.) J. F. Owen,
Ag: Under-Secretary, F. M. S."

"The Secretary,

Planters' Association on Malaya.

Resolved on the Chairman's suggestion to reply very much regretting the decision arrived at.

7. Outside Employment of Coolies on Sundays.

The *Secretary* reads the following correspondence:

"The Negri Sembilan Planters' Association."

"Seremban, 23rd September, 1914."

"The Secretary,

Planters' Association of Malaya,

Dear Sir,

I am directed by my Committee to acknowledge with thanks the receipt of your letter of 2nd instant enclosing Messrs. Drew & Napier's opinion on the points raised by a member of this Association in connection with the action taken against a native estate owner for *employment of coolies on a Sunday*.

My Committee are of opinion that if the present state of the law is such that estate coolies can be employed elsewhere on certain days in the month, representations should be made to Government to get this interdicted, and would be glad if you will kindly bring the matter up before the Standing Committee.

I enclose copies of the correspondence for your reference, and the matter will be supported at the next Meeting by the members representing this Association on the Standing Committee."

"I am etc.,
(Sgd.) V. A. Tayler,
Hon. Secretary."

"The Sungei Salak Rubber Co: Ltd."

"New Labu Estate,

Labu, 25th August, 1914."

"The Hon. Secretary,

Negri Sembilan Planters' Association."

Dear Sir,

With reference to our conversation Monday last, I now give you the facts of the case which I took against the local shopkeeper for crimping.

On Sunday, May 5th, the shopkeeper, Kadir Batcha, employed about 30 of my Tamil coolies to weed an estate he possesses of about 14 acres adjoining New Labu Estate. Next day I went into Seremban and saw the Deputy Controller of Labour about the matter and he considered that I was quite justified in taking action against Kadir Batcha and advised me to obtain a summons under Sec. 225 B of the 1912 Labour Gode, which the Magistrate granted.

The case was heard on July 10th and Kadir Batcha was defended by a Mr. Dobson, who admitted that his client employed New

Labu coolies on the date in question but argued that no offence was committed as the defendant had no intention of taking on my coolies on any day when they were required to work on their own estate. He also made a point about the coolies having worked on 6 days previously and as I could not force them to work on the 7th day they were entitled to go anywhere or do anything they liked, and were to all intents and purposes not in my employment on that day. The Magistrate, however, pointed out that Sunday was not necessarily the 7th day and might equally well be considered the first day of a new week, and after postponing judgment till July 16th found defendant guilty and fined him $25/-, $10/- of which he awarded to me for various expenses which I had incurred in connection with the case.

A week later I went to the Magistrate's office and was paid this $10/- and was assured by the Chief Clerk that Kadir Batcha had not up to that time appealed and that if he did so I should certainly be informed when the appeal was to be heard. You can imagine, therefore that I was considerably surprised to receive letter Enclosure No: 1. I replied to it as per Encl. No: 2 and received in answer No: 3.

I know you agree with me that it appears most strange and irregular that I received no intimation that there was any appeal against the Magistrate's decision and as the case is a most important one to the interests of the planting community I should be very much obliged if you would place this correspondence in the hands of the P. A. M. with a view to obtaining legal advice as to whether I have any remedy in the matter, as the plaintiff surely has a right to be informed if the defendant has appealed, in case he wishes to employ his own legal advisers when the appeal is heard."

"Yours faithfully,
(Sgd.) F. J. Lloyd."

"Enclosure No: 1."

"Magistrate's Office,
Seremban, 18th August, 1914."

"Police Case 1098/14."

"Sir,

S. Kadir Batcha, defendant's appeal was allowed. Will you kindly refund to me the $10/- paid to you on July 22nd last as soon as possible."

"Yours faithfully,
(Sgd.) T. W. Patton,
Magistrate."

"F. J. Lloyd Esq.,
New Labu Estate,
Labu."

"Enclosure No: 2."

"New Labu Estate,
August 19th, 1914."

"The Magistrate,
Seremban."

Dear Sir,

I am in receipt of your memo of the 18th instant and herewith enclose a cheque for $10/-.

As I have received no intimation that Kadir Batcha has appealed (Police Case 1098/14) I conclude that the appeal has not been heard yet, will you please let me know if this is so?

If the appeal has not been heard yet, will I receive due notice when the case is to be re-tried."

"Yours faithfully,
(Sgd.) F. J. Lloyd."

"Enclosure No: 3."

"Magistrate's Office,
Seremban, 20th August, 1914."

"Sir,

I herewith send you a receipt for $10/- being refund made by you in connection with Police Case No: 1098/14.

2. The appeal was heard on the 11th August and the Deputy Public Prosecutor appeared as Respondent. The appeal was allowed, hence refund of the fine to the defendant is necessary."

"Yours faithfully,
(Sgd.) T. W. Patton,
Magistrate,
Seremban."

"F. J. Lloyd Esq.,
New Labu Estate,
Labu."

"The Negri Sembilan Planters' Association."

"Seremban, 28th August, 1914."

"The Secretary,
The Planters' Association of Malaya,
KUALA LUMPUR."

"Dear Sir,

Enclosed I beg to hand you copy of a letter received from a member of this Association together with copy of certain correspondence that passed between him and the local Magistrate.

I would be much obliged if you would kindly obtain advice from the Legal Adviser to the P. A. M.

(1) If an appeal under such conditions can be re-heard and (2) if finally allowed, under what section of the Labour Code a summons should be taken out.

I need not I think dilate on the importance of a settlement of this question whether anybody can employ estate coolies on any one day of the week, but my Association considers if the present state of the law allows it, very strong representations should be made to Government, with a view of getting such employment prohibited."

"I am, etc.,
(Sgd.) V. A. Tayler,
Hon. Secretary."

"THE PLANTERS' ASSOCIATION OF MALAYA."

"Secretary's Office,
Kuala Lumpur, 2nd September, 1914."

"V. A. Tayler Esq.,
Hon : Secretary,
Negri Sembilan P. A.,
SEREMBAN."

"Dear Sir,

I thank pou for your favour of the 28th ulto., and now beg to hand you Messrs. Drew & Napier's opinion on the case."

"Believe me, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

"Drew & Napier."
Advocates & Solicitors.

"Dear Sir,

We have considered the correspondence which you have submitted to us for opinion on the subject of a case of crimping, laid before your Association by the Negri Sembilan Planters' Association.

Dealing first with the question of the appeal there is no doubt that the person convicted under Section 225 of the Labour Code 1912 has the right to appeal. With regard to the question of notice being given to the person who lays the information, it is of course quite unnecessary that this should be done either by the appellant or by the Police authorities. The person who complains of crimping lays his information before the Magistrate who issues his summons or Warrant and the matter is then in the hands ofthe Police,

and the parties to the Suit are then the accused and the Police and the person laying the information has no further interest in the matter in the sense of having any rights to receive notice of any proceeding or taking any steps on his own initiative therein.

Replying to the specific questions marked (1) and (2) in the letter of the Honorary Secretary of the Negri Sembilan Planters' Association, as to question (1), an appeal cannot be re-heard, and question (2) is disposed of by the answer to question (1).

With regard to the merits of the case the Judicial Commissioner has apparently decided that it is not a case of crimping if a person gives employment to labourers who offer their services to him upon a day when they are not compelled to work upon the estate where they are not permanently employed. We have not seen the Judge's notes of the case but we gather from the letters before us that this was the decision come to. In any case, we are of opinion that there is nothing to prevent the labourer being employed by a person other than his permanent employer during the day when his duties are not at the command of his permanent employer.

A labourer con be compelled to work only six days in the week and on one day in every week he is entitled to dispose of his time in any way that he wishes. It however lies with the employer to decide which six days in any week shall be working days and on the seventh day he cannot compel the labourer to do any work, except reasonable and customary work for (a) taking care of animals, (b) cleaning the machinery, (c) the maintenance of the machinery in an efficient condition, and, (d) the observance of sanitary regulations, (see section 99 of the Labour Code 1912). This one day a week is a day free from compulsory work and the labourer need not of course remain on the estate unless he wishes and he can occupy his time in any way that he chooses.

We return the correspondence you laid before us."

" Yours faithfully,
(Sgd.) Drew & Napier."

" H. C. E. Zacharias Esq.,
Secretary, Planters' Association of Malaya,

Mr. *Farquharson* considers that if the Judicial Commissioner read the Labour Code in this way, they should ask that it be amended to meet the case. He must say, he personally could not help feeling that the Magistrate's interpretation was the correct one. Either a weekly day of rest was good for the coolie or it was not. If it was, it was wrong that he should be able to evade this provision; if it was not, surely his permanent employer should have the

benefit of his services and not an outsider, who had no obligations towards him. He would propose that an amendment of the Labour Code in that sense be obtained.

Mr. *Jeavons* seconds this motion.

Mr. *Macfadyen* remarks that in the meantime it was of course almost always possible to get at this class of temporary employers of one's coolies, as they nearly always committed some breach of the Labour Code. He himself got the other day a Chinaman fined $167 for employing 167 coolies on a Sunday because he did not keep books in English (Laughter). A close reading of the Code almost always revealed some way of getting at such people.

The motion is put to the meeting & carried unanimously.

8. Export Duty on Rubber.

The *Secretary* reads the following correspondence:—

"Kuala Lumpur, 21st September, 1914."

"The Commissioner of Trade & Customs, F. M. S.,
KUALA LUMPUR."

"Sir,

I am instructed to address you with regard to the rate of duty leviable on cultivated rubber under Gazette Notifications Nos. 2686 and 2834.

2. We understand that the cabled London price of 1st Latex is taken as the basis for assessment of export duty, 3d per lb. being deducted.

3. Until recently this calculation would, we consider, have given a fair measure of the average value of a well prepared general consignment of rubber, at port of export.

4. I am to submit, however that, since the demoralisation of the market due to a state of war this is no longer the case. At the Singapore auction on September 15th between 60 and 70 tons were catalogued but only 21 tons of rubber found buyers at all. Of this quantity, a small lot of pale crepe fetched $97/- per pikul, this being the highest price obtained. Most 1st quality grades fetched about $80/-. Brown grades sold as low as $60/-.

Private advices from London to a leading firm of merchants here are to the effect that barky grades of rubber are unsaleable and should only be shipped if they can first be re-washed in a Universal Washer (a machine only at the disposal of the best equipped factories) also that only limited amounts are changing hands of the better grades at the prices cabled out. The cabled price, in fact, has become a seller's price, and not a buyer's.

Further the sale of rubber has become entirely a spot cash business; forward sales having become impossible.

5. I am therefore to submit that the cabled London price is no longer any indication of the value of rubber here at date of export, and that, in justice to the producers, some new basis of assessment should, temporarily at any rate, be adopted. Low grade rubbers shipped next Friday will, under notification No: 2834 pay duty at about 4½% of their selling value.

6. As a more equitable basis of assessment, I am to suggest that the mean of the highest and lowest prices for 1st grade rubbers at latest Singapore auctions be taken, and $8/- per pikul be deducted. If you obtain from any Singapore firm a complete list of the quantities and values of consignments changing hands at any recent auction there, you will find that the figure thus obtained approximates closely to the average price.

Amongst first grade rubbers for purposes of this calculation I suggest that all forms of sheet, pale crepe, and block described as No: 1 should be included.

7. May I venture to emphasise the urgent importance of some decision being announced in regard to this matter.

8. I attach, for your information, reports of the latest Singapore Auction."

"I have, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

"Kuala Lumpur, 28th September, 1914."

"The Commissioner of Trade and Customs,
F. M. S.

"Sir,

In continuation of my letter of 21st instant on the subject of export duty of rubber, I now beg to send you the following summary of sales at the Singapore Chamber of Commerce Auction on 22nd instant. This auction was somewhat more favourable to sellers than either of the two preceeding ones; yet the results strikingly illustrate how unjust in its incidence is the new method of assessing duty. The following is a summary of the amounts sold and prices realised :—

	Weight.	Price Realised.	Average price per pikul
Fine Ribbed Smoked Sheet	193.84	$17,908.90	$92.39
Good Smoked Sheet	199.24	16,366.56	82.14
Unsmoked Sheet	133.38	10,015.11	75.09
Pale Crepe	69.94	5,495.18	78.57
Fine Brown Crepe	38.71	2,982.41	77.04
Good Brown Crepe	58.78	3,959.41	67.36

Dark Crepe	68.55	4,114.78	60.03
Bark Crepe	68.19	3,618.35	53.06
Virgin Scrap	18.15	865.33	47.68
Loose Scrap	5.03	182.24	36.23
	853.81	$65,508 27	

The average price for the whole auction comes out at $76.62. Exporters paid duty, however, at 2½% on $115 or $2.87½ per pikul. This calculated on a value of $76.62 is equivalent to 3.75% instead of 2½%."

"I have, etc.,
(Sgd.) H. C. E. Zacharias,
Secretary."

"No: 25 in 690/14."

"Kuala Lumpur, 15th October, 1914."

Sir,

In reply to your letter dated the 21st September 1914 on the subject of the Export Duty on Rubber, I am directed to inform you that the Government have considered the request, but in the circumstances are unable to grant further relief to the industry."

"I have, etc.,
(Sgd.) F. W. Firmstone,
Ag. Commissioner, Trade and Customs,
Federated Malay States."

"The Secretary to
The Planters' Association of Malaya.

Mr. *Lancaster* points out that many old titles expressly provided that not more than 2½% on an ad valorem basis be charged.

Mr. *Prior* had even seen a case where the title provided that it should be free of duty for ever.

Mr. *Macfadyen* thinks that in such circumstances test cases might be brought. The present method of ascertaining the value had aroused a good deal of animosity. The answer received from the Government was a surprise to him, as he had been given to understand Government would adopt the local value, the only reasonable way of fixing the duty. It must be clearly understood that the basis of calculation was merely to be a reasonable way of ascertaining the value, and not a means of raising the duty. Obviously, when the method had become unreasonable, it should be abandoned.

Mr. *Boyd* points out that the complaints made applied equally to the Copra industry.

Mr. *Duncan* quite agrees the present hardship and unfairness, but considers that it should be recognized that the action taken by Government constituted a very real concession. He would therefore propose :

"That this Association, while welcoming the application to the rubber export duty of the principle of the "sliding scale, desires to enter a strong protest against the "basis of assessing values adopted since the scale was "brought into force."

Mr. *Prior* seconds this resolution, which is carried unanimously.

9. Honorary Members.

The *Secretary* reports having received the following motion from the Batang Padang P. A :—

"That heads of all firms of Estate Agents be co-opted "Honorary Members of the P. A. M. and have voice in all "financial matters of Estates they represent."

Mr. *Tylden-Patterson* dissociates himself from the proposal and remarks that the member responsible for it was not present.

The proposal finding no proposer, is dropped.

10. Employees on Estates.

The *Secretary* reads the following letter :—

"No. 3181/14."

"Kuala Lumpur, 1st October, 1914."

"Sir,

I am directed to forward, for the favour of the observations of the Planters' Association of Malaya, an extract from a report by the Deputy Agent, Malay States Information Agency, on the working of the Agency for the year ended 31st December, 1913."

"I have, etc.,
(Sgd) T. P. Coe,

for Ag. Under-Secretary, F.M.S

"The Secretary,
Planters' Association of Malaya,
Kuala Lumpur."

"Extract from a report for 1913 by the Deputy Agent Malay States Information Agency, on the Working of the Agency."

Routine Work at the Agency

8. The increase in the number of callers for information on all subjects at this Agency has been very notice-

able. No trouble has been spared to give the intending traveller to Malaya—who is bent on pleasure—the fullest particulars, and I noticed, in an issue of one of the local newspapers lately, some remarks touching on the assistance this Agency had given to a distinguished traveller. Hundreds of young men—presentable and suitable for employment—have applied at this Agency, with the hope of being able to obtain employment on rubber estates or elsewhere. It has not been possible, however, to do much for these men in the way of bringing them into touch with employers. The chief reason for this is that employers will not use this Agency—except on rare occasions—to recruit employees. Why this is not done I am unable to say as I believe those who have invoked our assistance have been able to get good men sent out to them. If employers out in the East and in London, would give this Agency greater recognition I feel certain they would find that this Agency could supply them with suitable men.

11. Indian Immigration Committee.

The *Secretary* reads the following correspondence :—

"Boustead Hampshire & Co. Ld."

"Immigration Department."

"Port Swettenham, 5th October, 1914.

The Secretary,
Planters' Association of Malaya,
Kuala Lumpur."

"Dear Sir,

We would beg to bring to your notice that when we were approached at the end of last year with a view to getting our rates reduced in connection with the delivering and forwarding of coolies, we were prepared to meet the Estates by charging the rates now in force, but it was distinctly understood at the time that our bills would be paid on presentation. This, however, is not being done, and as we have now a great number of bills outstanding for more than 3 months, and in some cases 6 months, we fear that we will require to revert to the old rates, unless the Estates are prepared to pay our bills more promptly in future.

There are some estates who apparently have no difficulty in meeting our bills on presentation, and we trust therefore that you will kindly see your way to help us and get the others to fall in line as we would prefer not to revert to the old rates if possible.

As regards payment of passages it would greatly facilitate matters if a cheque accompanies the requisition as otherwise we have to pay the cost and wait till our bills are paid.

Thanking you in anticipation,

We remain, etc.,
BOUSTEAD HAMPSHIRE & Co., Ltd.,
(Sgd.) G. Newton
of the Madura Co., Ltd ,"

"No : 2 in 509/1914 "

" Office of the Controller of Labour,
S. S. and F. M. S.,
" Kuala Lumpur, 10th October, 1914."

" Sir,

I have the honour to inform you that I have received from Messrs. Boustead Hampshire and Company, a copy of a letter addressed by them to you on the 5th instant, in which they complain of the difficulty experienced in collecting outstanding accounts from some employers who make use of this firm's services for feeding coolies on arrival in this country and forwarding them to their destination.

2. In this connection I would invite your attention to my letter to you dated the 18th December 1913 in which I advised you that Messrs. Boustead Hampshire and Company, had, on representations from the Indian Immigration Committee, made certain reductions in their agency charges for feeding and forwarding coolies.

3. The third paragraph of my letter referred to runs as follows :—

" Messrs. Boustead Hampshire and Co. while assenting
" to the proposed reduction of their agency fees, have point-
" ed out to me that they suffer serious inconvenience from the
" delay in many cases in settling their accounts. They have
" quoted actual figures which show that there are reasonable
" grounds for complaint. I would therefore ask you to be
" so good as to impress upon the members of your As-
" sociation the importance of meeting their agents in this
" matter, especially in view of the very material modifica-
" tion in charges that have been secured."

4. I venture to point out for the consideration of your Association that it would not be possible for the Indian Immigration Committee to ask Messrs. Boustead Hampshire and Company, to adhere to the reduced agency charges agreed to by them if it could be shown that their clients had failed to meet them in the way of prompt settlement of their accounts."

" I have, etc.,
(Sgd.) E. S. Hose,
Ag. Controller of Labour, F. M. S."

12. Dates of Meetings.

Mr. *Irving* regrets that the present meeting had been called on Dhibavali, as this was the time when Managers wished to remain on their estates and give their assistants a chance of getting away. He considers it a bad plan not to fix at each meeting the date and venue of the next meeting. He would propose the next meeting to be called at Kuala Lumpur on Jan. 3rd 1915.

This suggestion is seconded by Mr. *Cumming* and agreed to.

With a vote of thanks to the Hon. the Ag. Resident of Perak for his courtesy in placing the Perak Council Chamber at their disposal, and to the members of the Taiping Planters' Association for the hospitality extended to this Association, the Meeting terminates at 1 p.m.

H. C. E. Zacharias,
Secretary.

DEPARTMENT NOTES.

Mr. W. N. C. Belgrave, 2nd Assistant Mycologist, Department of Agriculture, F. M. S. arrived at Kuala Lumpur and assumed the duties of his appointment on 9th November 1914, (vide A. B. Vol iii, No. 1 p. 32).

Mr. W. L. Wood, Superintendent Hill Gardens, Taiping, resigned his appointment on 7th October, 1914.

Mr. L. M. Berenger has been appointed temporarily to act as Superintendent.

Comparative Returns of Exports F.M.S. during 2nd Quarter 1914.

ARTICLES.	How counted.	SELANGOR.		PERAK.		NEGRI SEMBILAN.		PAHANG.		TOTAL.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			$		$		$		$		$
Coconuts		...	...	...	381	...	360	...	73	...	814
Copra	Pikuls.	11,495	130,020	46,762	528,308	748	8,579	756½	8,464	59,761½	675 371
Coffee	,,	2,126½	76,475	81⅕	1,625	...	...	...	...	2,207 7/10	78,100
Padi	,,	24	52	37,250	75,701	10	35	...	...	37,284	75,788
Rice	,,	...	...	55,627	245,751	...	...	...	...	55,627	245,751
Pepper	,,	...	...	...	...	10	197	31	558	41	755
Sugar	,,	...	...	5½	63	...	...	...	...	5½	63
Tapioca	,,	...	...	4,655	5,247	4,832	26,503	1,861	10,198	11,348	41,948
Gambier ...	,,	324½	2,278	...	...	1,752	14,886	...	...	2,076½	17,164

Comparative Returns of Imports F.M.S. during 2nd Quarter 1914.

ARTICLES.	How counted.	SELANGOR.		PERAK.		NEGRI SEMBILAN.		PAHANG.		TOTAL.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			$		$		$		$		$
Coconuts ...	...	...	151	..	7,614	...	350	...	40	...	8,155
Copra	Pikuls.	5	48	...	...	...	...	...	...	5	48
Coffee	,,	34	1,083	142	3,925	32	1,064	63	1,891	271	7,963
Padi	,,	4,431	13,443	3,267	7,185	420	1,319	1,837	4,773	9,955	26,720
Rice	,,	363,521	1,865,766	384,637	1,796,330	89,426	436,701	34,140	178,908	871,724	4,277,705
Pepper	,,	175½	4,360	84	1,859	27½	482	...	...	287	6,701
Sugar	,,	22,256	136,831	35,468	211,227	5,716½	33,777	2,512	16,802	65,952½	398,637
Tapioca	,,	772	3,488	1,102	13,177	462	968	...	...	23,36	17,633
Gambier ...	,,	83½	787	95½	1,547	44	421	20	320	243	3,075

FEDERATED MALAY STATES.

Comparative Statement of Cultivated Rubber Exported, with Value and Duty Collected Thereon, During the Years 1914 and 1913.

Destination.	Exported during Sept. 1914.	Previously.	Total export during the year.	Export during similar period of previous year.	Increase.	Decrease.	Value of rubber exported, 1914.	Duty collected, 1914, to date.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	$	$ c.
Straits Settlements ...	1,383.18	11,313.23	12,696.41	7,404 58	5,291.83	...	20,046,927	
United Kingdom ...	1,421.22	6,013.12	7,434.34	7,759.06	...	324.72	14,730,417	
Continent of Europe...	6 00	801.78	807.78	1,013.86	...	206.08	1,437,762	
Ceylon	92.75	442.88	535.63	450.26	85.37	...	729,894	
Other Countries ...	...	100.27	100.27	...	100.27	...	413,498	
Total ...	2,903.15	18,671.28	21,574.43	16,627.76	5,477.47	530.80	37,358,498	866,483 92

KUALA LUMPUR,
6th October, 1914.

H. W. FIRMSTONE,
Acting Commissioner, Trade and Customs, F.M.S

Abstract of Meteorological Readings in the various Districts of Malaya for the Month of September, 1914.

DISTRICT.	Mean Barometrical Pressure at 32° Fah.	Maximum in Sun.	TEMPERATURE.				HYGROMETER.				Prevailing Direction of Winds.	Total Rainfall.	Greatest Rainfall during 24 hours.
			Mean Dry Bulb.	Maximum.	Minimum.	Range.	Mean Wet Bulb.	Vapour Tension.	Dew Point.	Humidity.			
Kelantan, Kota Bahru	...	151.	81.9	91.	74.2	16 8	77 8	·868	75.	79%	...	9 45	2.15
Malacca, Durian Daun Hos.	29.870	148.6	82.6	87.	71.1	15.9	79 3	·959	...	88	N.	7.35	1.66
N. Sembilan, Dist. Hospital Seremban	...	152.8	79.3	87.5	71.2	16.3	76.2	·842	74.	84	...	7 47	1.09
,, Dist. Hos. K. Pilah	...	151 9	78.9	89.6	72.9	16.7	76.3	·845	74.1	81	...	4.98	1.45
,, ,, Tampin	...	144.8	81.1	90.6	...	...	76.6	·828	73.5	77	...	5.90	1.38
,, ,, P. Dickson	...	158.1	82.2	86.9	74.	12.9	77.6	·858	74.6	78	...	6.37	1.61
,, ,, K. Lipis	...	...	81.7	90.9	70.4	20.5	76.					5 45	1.08
Penang, ,, Penang	29.822	135.	81.7	87.8	73.	14.8	77.4	·891	74 2	82	...	19.04	3.99
Perak ,, Taiping	...	105.	81.53	95.	68.	27.	76 89	·861	...	80	..	26.51	4.77
,, ,, Ipoh	...	...	81.69	92.	70.	22.	76.84	·859	...	80	...	7.59	1.80
,, ,, T. Anson	...	...	82.60	93.	71.	22.	77 86	·890	...	81	...	15.63	2.85
,, ,, P. Buntar	...	...	82.93	94.	71.	23.	77 30	·863	...	77	...	7.18	2.93
,, ,, The Cottage	...	...	...	...	...	...	...	...	...	...	...	29.54	3.28
Selangor General Hospital Kuala Lumpur	...	149.4	81.	87.9	63.4	24.5	77.6	·881	75.3	82	N.W.	6.54	2 63
,, Dist. Hos. Klang	...	...	80.9	87.0	73.2	13.8	77.	...	...	...	...	3.28	1.20
,, ,, K. Selangor	...	...	...	88.2	74.6	13.6	...	...	...	...	...	2.88	.88
,, ,, Rawang	...	...	...	91.5	72.1	19.4	...	...	...	...	...	8.38	1.63
Singapore Kandang Kerbau Observatory	29.912	157.	83.2	88.8	75.9	12.9	77.8	·867	...	74	S.E.	2.55	.91